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# SILVERSOFT





Please drop us a line at: Computer and Video Games, CMAP, Spectrum House, 1 Market Hill, London EC2R 2JH.

## QUICKDRAW TO MUSIC

Dear Sir,

Quickdraw in the June 1983 issue of C&VG was excellent. I typed it into my Apple computer and was immediately impressed by the graphics. For the Death March row was awful! I have written a new Death March routine which other readers might like to try.

Change line 66 to read as follows: 98 DATA 245, 235, 200, 245, 205, 250, 245, 275, 50, 245, 205, 150, 250, 205, 200, 235, 175, 95, 235, 190, 180, 245, 185, 55, 245, 295, 155, 247, 195, 55, 245, 285, 500.

Mark Heather,  
Surreywash,  
Essex.

## OVER THE STICKS!

Dear Sir,

I own a 128 ZX81 and have a motherboard and wish to attain a 128 port so that I can use my Atari joystick. Do please could you tell me if there is any such 128 port for the Atari joystick and who makes them.

Dean Clark,  
Barking,  
Essex.

Editor's reply: There are three main joystick controllers for the Sinclair machines. They are made by Kempston, Fuller and AGF. Kempston and AGF modules plug directly into the rear of the ZX computer. The Fuller system is part of its "base". These will all be reviewed in the near future.

Kent Archer, of Fuller, describes what happens when a joystick is used: The Fuller box has a joystick controller port or socket which works in a similar way to Kempston's.

Our joystick is ceased by the Spectrum using the "IN"

command. The eight-bit bits of port 127 are usually high in Port 127 contains decimal 255 or binary 11111111. As the joystick is moved around or the fire button pressed, certain bits of the eight-bit byte will be pulled low to logic 0.

Therefore the IN 127 command would return different decimal values according to which direction the joystick is being pushed.

J L L L L L L L

port 127

normally high = logic 1

0 = logic 0

direction of joystick

0 0 0 0

As the joystick is pushed up, bit 0 is pulled low on the binary value because 11111110 = decimal 254. When the fire key is pressed bit 7 goes low giving 01111111 = decimal 127.

Any combination of direction or fire key is, dependably up and left as



well as fire would give three bits low in 01111110 = decimal 122

So, in a BASIC program, a statement of the form: IF INKEYS = "0" THEN LET X = X - 1 for action to the left could be replaced by IF IN 127 = 254 THEN LET X = X - 1 or IF IN 127 = 250 THEN LET X = X - 1.

Replacing the appropriate INKEYS statement with the right IN 127 command, a

game could be controlled by joystick instead of cursor keys, or any other combination of keys.

One common question asked is "which keys does your joystick work on?" The answer is none.

Buying a joystick does not mean that you can control all your games without changes. I have found that people think that if they have a game which uses the common control keys — L.A.T.A., with 0 to fire or similar, and they had another game with the same keys to control the game but it also works on a joystick, then they assume that all games using these keys will be OK using a joystick and controller.

They don't realize that the game needs to be changed to use the joystick being used.

## THE LONG LOST BUG!

Dear Sir,

A word about the bugs. What has happened to Lost Memory (see May 83 issue, No. 1)? I suppose he's forgotten which issue he was in and has just wandered off. By the way, who is the person behind the marvellous Bugs strip?

As an ardent fan of the Bugs strip in magazines and not in ROM's or in programs I thought of a basic story line you might want to see. The motto has a synthesizer, and when it plays music for "Finger", "Gaps" and "Brr's" as the case may be! It's all thanks to the Bug's band. The main-come, however, bugs a super-additive "shoot-em-down" game with "Gaps", "Bells", "Wagawagawag-woooo" and everything else you can think of.

So as the main-come plays this game for hours on and the bugs soon collapse exhausted and all that's left of the game is the way of word

in "Bip", "Choo", "Bawoo", "Ooooh", "Fuzz", "Jenny Humpman, Old Gump, Norwick.

Editors reply: Elphix Lloyd-Jones is the man behind the Bugs strip, and he is always looking for new ideas for stories — otherwise he has to rely on the feeble efforts of your readers. Do we'll consider your idea and if anyone else out there has a good idea for a Bugs' script please get it down on paper and write to:

## A WOULD-BE SKY PILOT

Dear Sir,

I own a ZX81 Pet and as yet I have not found one flight simulator for it.

Please could you ask your readers if they know of any company which supplies this game?

P.S. What do you get if you cross a nuclear reactor with a computer? Please Clive! Barry Jones, Knebworth, Herts.

## CONVERTING COMMANDS

Dear Sir,

At school we learn how to write programs and use a Pet computer, but I can only afford an ZX81 plus MK IIAS. Could you tell me if there is a piece of hardware or cassette to convert the BASIC command to READ/DATA? Dean Moore, Darwin, Lancs.

Editor's reply: Most ZX81 programs use string arrays to overcome the lack of READ/DATA, RESTORE. They also use LET too.

You will have to do this conversion to get any software using these constructions to run on the ZX81. (Give the string containing the information.)

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If you are an Acorn owner, or just thinking about being one, you can't afford to miss it.

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# MAILBAG



## LONG LIVE THE PET

Dear Sir,  
Is my Pet dead? I was introduced to computers about a year ago, and was fortunate to obtain a small keyboard 2601Sr Pet at a reasonable price, on which to start. Up to that time there was a wealth of useful programs for the Pet in the magazines on the market.

With increased experience, I now need more memory and would like to upgrade the ROMs. Correspondence with Commodore for help only produced an unsatisfactory reply after several letters and months, and the Commodore agents I contacted only wanted to upgrade as part of an expensive service, or sell me a Vic.

The Pet Users Club provided the most beneficial advice and consequently I have now installed one of Justin Compton's excellent 512 expansion ROM's but the ROM problem will remain.

The point of the letter is to ask in the light of COM's general unhelpfulness, if the Pet has finally reached the end of its life.

It is also interesting to note that most magazines, including yours, now have very little of any correspondence to offer for the Pet, so seem inundated with offerings for the Vic and IBM!

In conclusion, I shall like to thank you for refreshing approach to computer programming in your articles, mainly "Practical Programming" and "Graphics".  
J. Ryan  
March

**Complaints.**  
**Editor's reply:** The Pet, in its original form is most certainly 'dead' and has been for some years. It has, however, produced a number of offspring — the Vic, Commodore 64 etc. The model you have is difficult to upgrade to Basic 2.0 or Basic 4.0 and further discussion with the Pet Users Club should point you in the direction of other members who have overcome the problem.

As for the lack of

software... the Pet was really developed as an engineering/commercial educational machine and so few games have recently been published as its derivatives do so much better. There is nothing to stop you converting Vic games into Pet ones.

## CRACKING THE CODE

Dear Sir,  
I own a ZX Spectrum and I am having problems with saving writing and loading. I think it would be a good idea if readers who can successfully save, verify and load volumes could tell your readers the volume settings they use on their cassette recorders when carrying out these functions. It would also help if they tell us the make of recorder they use.

My own recorder is a Waltham W10M2A, Nair Morgan, Warrington, War Midlands.

**Editor's reply:** The Waltham cassette recorder is a fairly cheap model and is not really recommended for the Spectrum. Even similar models give different results — so your idea is not really so. We suggest that anybody buying a cassette recorder for any computer tries it out before paying for it!

## KONG'S ODD BEHAVIOUR

Dear Sir,  
I am writing on behalf of all the Donkey Kong players in Eastbourne, we have about four or five Donkey Kong machines in various arcades and pubs in Eastbourne, but every now appears to be faulty.

My present high score is 48,500 which I achieved several months ago and which you printed in your magazine. I achieved this score and had two lives left when the machine went faulty. Since then I have not found a single machine in or outside Eastbourne which will go above that score.

I know that some machines in the USA go up to 99,000 but they have a different type of machine.

I have also found other variations on the game in France and Spain in which extra gaps have been left in the beams so that Mario has to jump holes as well as barrels. Also it seems to occur (on the pin screen) Kong rolls around on stones and, on the pin screen, if you touch Kong you die. On others you can run behind Kong as it flows.

On all of the different machines I have played on they all seem to go wrong as



I have explained. This is a great pity as I can now reach 99,000 with only one life left the machine goes wrong and I lose the other three lives. I am sure that if I played on a working machine I could obtain a much higher score. Have any of your other readers experienced that?  
J. Bull  
Eastbourne,  
East Sussex

## PROCESSING VIDEO GAMES

Dear Sir,  
Could you please advise me whether there are any video game programmes that are compatible to use with Spellbinder word processor. Also J. E. O'Brien,  
Ipworth,  
Suffolk

**Editor's reply:** Most word processors are not able to handle games. However, your seems to be able to use Basic. What any game needs though, are decent graphics so it would be highly unlikely that any games are available.

## DEFENDING THE ATARI

Dear Sir,  
I felt I must write and voice my disagreement with a number of points raised in your May issue. First, I disagree that the standard of Atari games published is particularly high.

Secondly, Mr D. A. Johnson, I believe from an interested friend that TI games are only available if the extended basic cartridge is bought.

Lastly, your Atari Defender reviewer cannot be an Atari owner, Pat Peppin, Preston, Greater Cheshire and 200 other games up against Acornsoft — the only real quality home games — and Atari would win every time. Many thanks,  
Reading,  
Avon.

## NEW IDEAS, NEW GAMES

Dear Sir,  
I have an idea for what I believe to be an original video game for home or maybe arcade use. However, my knowledge of programming is insufficient to enable me to produce more than an outline. Could you please tell me

which manufacturers might be interested and how might they be best approached? What detail would be required? How can I best protect my interests?  
A. F. Hobson  
Chesham,  
Northumberland

**Editor's reply:** The best way to locate a manufacturer/distributor of games is to look through, say, CIBFO and find who seems to be marketing the best range for your machine. Just write a letter and say what you have. Do not send anything. Outline the game and ask for details of any legal agreements they may use. Any reputable company has these things sorted up.

Your interests could best be looked after by going to a lawyer, and let him have a look through any agreement. Pay 10% of any sales, or some money up front and a lower royalty.

## YOUR NEW PROGRAM COULD WIN YOU £5,000!

Put a special effort into your next program — it could be worth £5,000.

There's £5,000 in good honest cash going to the winner of our August competition to find Britain's brightest programming talents.

The prize comes from Calisto Software of Birmingham which is keen to expand the number of machines it covers and use home-grown programmers rather than ship in games from the US.

Calisto's Mike Woodroffe believes it takes three months to write a good games program and that's what you're getting. If you're starting from scratch, your program must be finished by October 19th.

If you are going to polish up one of your previous efforts, then why not send it quickly and get started on another program. You can enter as many programs as you like as long as each comes with an entry form (our from the magazine — and we'll have more forms in our September and October issues).

But there's a chance for everyone to be a winner in this competition as Calisto will be giving out software contracts to the designers of games they want to market.

So even if you don't end up £5,000 richer straight away, you could still

find the royalties rolling in if you become part of Calisto's team of software writers.

You can enter on any popular microcomputer and all cassettes will be tested by Calisto's team of judges. If your offering is picked as the winner, you'll be presented with a cheque for £5,000 at the brand new home computing show Brain-wave '83 in the NEC Birmingham in the first week of November.

To enter, simply fill in the form below and attach it to a cassette of the game. Make sure you fill in all the details about yourself and your game on the form.

If the game instructions are not included on the cassette itself, then add them on a separate piece of paper but please ensure that your name and address are included on every part of your entry.

Perhaps you are a keen programmer who has not yet turned his hand to games, then you can enter any kind of program and Calisto will test it out.

The winner will be the reader who comes up with the best commercial program, and Calisto will also pay royalties on all copies sold. Remember all published entries will be given a software contract, possibly worth a lot of money.

The judging time is limited so get your entry in as quickly as possible but be sure that your program is properly polished first, to give yourself a good chance of coming away £5,000 richer.

The entries must be sent to: £5,000 Program, Calisto Software, 119 John Knight Street, Birmingham B1 1BE.

## VOTE FOR THE GOLD STICKS

Do you have a favourite game that is worth its weight in gold? Or a software company you would like to reward for its high standards and prompt service?

Here at CS'83 we decided that the best of British software houses deserved the chance to win some recognition after a hard and competitive year which has seen games programming standards rising fast.

We are sponsoring five Golden Joystick Awards which we hope will become the UK Oscars of games programming.

This is your chance to nominate a company which has given good service or earns recognition for the game which has given the most pleasure in the last nine months (since November 1982).

Our five categories are:

- **Best Arcade-style Game**, which goes to the cassette or cartridge which proves itself the most addictive and thrilling.
- **Best Strategy Game**, is the title bestworn on the finest cassette or cartridge to test the mind rather than the trigger finger — like a favourite adventure.
- **Best Original Game Idea** goes to a company which has come up with a game of a completely new type, unlike any board, arcade or computer game seen before.
- **Software House of the Year** goes to the company which has earned the best reputation for quality games, good service and entertaining advertising.

Please enter this program in the £5,000 program competition

Program name: .....

Machine: ..... Model: .....

Number of K needed to run it: ..... K

Other equipment needed to run it: .....

Author's name: .....

Address: .....

Telephone No: .....

All entries will be the property of Calisto Software and the entrants will assign all rights, patents and privileges of their game to Calisto.

No employees of Computer & Video Games, Calisto, or their relatives, will be eligible to enter the competition.

All entries must be sent in with an original cassette from Computer & Video Games — NOT a COPY.

The judge's decision is final and no correspondence can be entered into.

You can enter any number of programs as long as each is sent in with a form from Computer & Video Games. Winners will be notified before October 30th.

# COMPETITION COMPETITION COMPETITION

Game of the Year is the most coveted Golden Joystick of all, awarded to the game which most impresses the judges in 83.

This game must first have won one of the previous games categories and where that has happened the second-place cassette is promoted to take that title.

Initially we are leaving the judging up to you and want you to tell us your nominations in any or all of the categories.

Just pick out your favourite games and fill in the form below.

The title Software House of the Year is open to distributors of overseas software, but for the rest, we are looking for British-based games programmers.

Cut out the form below and make your vote for gaming quality count. Send it to:

The Golden Joysticks, Computer & Video Games, Daines House, Finch Hill, London EC1R 3PS.

NAME	CHARACTER TYPE	SCORE	WORLD	FLEET	SHIPS	MINUTES	BOULTS
ARKAN	COLLECTOR	2080	18	11	124	18	0
CAVIL	SHIP/BUILDER	1818	18	10	71	7	0
CRONO	COLLECTOR	1780	18	18	129	19	0
ALVIN	PIRATE	1687	9	15	91	2	0
FRANK	COLLECTOR	1550	16	14	85	8	0
TRUCK	APRISTLE	1550	12	19	73	9	0
ARACH	SHIP/BUILDER	1444	25	19	93	1	0
BRAND	PIRATE	1342	19	9	53	7	0
SEAN	APRISTLE	999	12	16	108	0	0
CELE	APRISTLE	872	11	12	33	2	0
ANAKA	WINDUPPER	858	23	18	58	0	0
JOHN	WINDUPPER	262	12	11	66	0	0
TRUCK	MERCHANT	258	11	9	104	0	0
JOY	MERCHANT	208	13	8	58	0	0
WISALA	WINDUPPER	111	13	14	55	1	0

WICKTON POINT LIMIT = 2,486 (MAX 18,000)

## DID YOU TANGLE WITH THE STARWEB?—THEN READ ON

Our Starweb game is now over — but we hope that all of our readers who took part enjoyed the experience. Here's a message from one of the people who joined in, Mark Woodcock, and a rundown of the final positions.

"Overall Starweb has been an excellent game, becoming at times a time consuming hobby whilst still retaining the ability to be played quickly and with little thought should you find yourself busy with other things.

One of Starweb's best features is the interaction with "red" players, rather than semi-pretendable "computer" players, in whom you could find all the better and worse traits of human nature and who give the game a complexity impossible to get from the computer alone.

However, the game was not without its frustrations, the main one being the fate of all things of a literary nature that are foolishly allowed to fall into the hands of the Post Office.

One thing though, that is a fault of the game is the obvious imbalance between character types. You can see at a glance from the scores sheet the types that the game favours.

So poor Banzarkers must be the result of a Banzarkish game designer, and so for the Merchants, their wealth presumably relies upon trust and good-will both of which are notably lacking in a game where there's only one winner. In the Starweb rule book there is a hint that a handicapping system might be introduced, but when?

Finally, although I'm full of ideas on how to conduct my next game of Starweb as a result of my experience, I'm afraid the cost is too much at £30 or more per game.

However, I'd love to play Starweb again and again until I found a way for the poor-sounding Banzarker to come out on top. And after that I'd have a go at the Merchant type. Life's no fun without a struggle.

Mark Woodcock,  
Formerly Great Fleet Controller

Please accept the following nominations for the Golden Joystick Awards.

(BLOCK CAPITALS PLEASE)

1) Best Arcade Type Game: .....

By (Software house): .....

2) Best Strategy Game: .....

By: .....

3) Best Original Game: .....

By: .....

4) Software House of the Year: .....

5) Game of the Year: .....

By: .....

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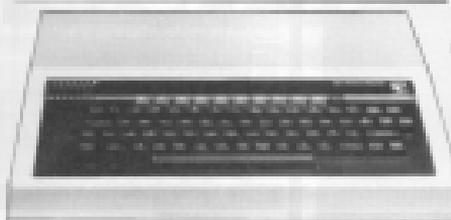
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# COMPETITION COMPETITION COMPETITION



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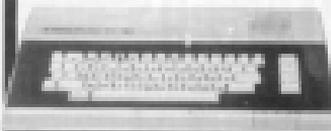
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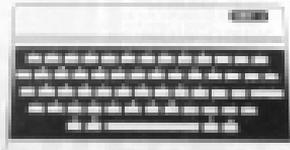
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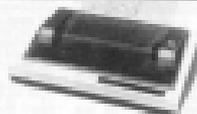
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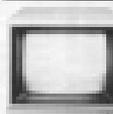
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# NEW PRODUCTS NEW PRODUCTS NEW PRODUCT

# GAMES NEWS

## DIAMONDS ARE MARIO'S DOWNFALL!

HOME 64

Diamonds are a girl's best friend — until they stop her being rescued from the clutches of a well-known ape.

In *Krazy Kong 64*, Mad Mario is once again faced with the task of rescuing his starlet girlfriend. But this time, he not only has to dodge the leaping barrels, he must also gather up her scattered diamonds.

Should he miss a diamond, Mario has the risky job of backtracking to steps to collect it, at the same time dodging the ever-present barrels, before he can move on to the next level. The remaining levels offer further challenges with various objects to be collected.

*Krazy Kong 64* is a one-player game and you'll need a joystick. It is available from Manchester-based Interceptor Micros and all leading retailers at £100.

Also available for the Commodore 64 from Interceptor Micros this month, are *Star Trek*, an interstellar adventure game, *Spaceman*, based on the original arcade game Pacman and *Scramble*, all retailing at £100.

## SIXTEEN SCREENS OF DANGER!

MANIC MIMIC

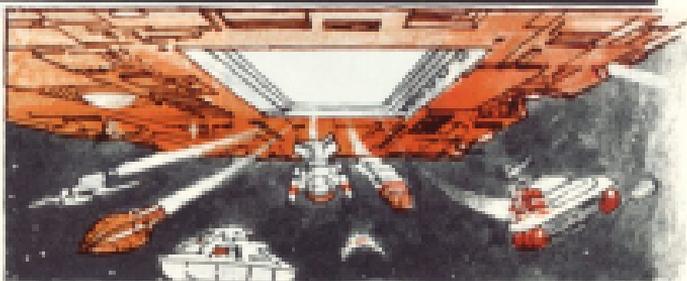
*Manic Mimic* is a sixteen screen climbing game for the Sinclair Spectrum, due out shortly from Bug Byte software of Liverpool.

Based on the hit American game *Mister Spide* the idea of the game is to get your little character up to the final screen — climbing ladders — leaping on lifts and jumping onto platforms.

Various obstacles will have to be overcome if you are to successfully get your little man to the top.

*Manic Mimic* will run on the 16 or 48K Spectrum and will be in the shops in July at £5.95.

The Liverpool-based firm have recently been celebrating their



## ARCADE ALIENS INVADE!

GOFF

That popular *Bally Midway* arcade game *Goff* has now been licensed by Commodore and converted to cartridge for the Vic-20.

Four levels of attack are mounted on your last base as you struggle to repel the barbarian hordes' but to take over Earth.

The last wave of attackers consist of *Orion* ships and SP7's controlled by a single Goff from a safe distance. The purpose of this first attack is to test your defences.

The real battle begins on level two when a Goff confronts you with *Attack* and *Laser* ships.

If you survive this level the Goffs will know that they've got a fight on their hands and will send their toughest pilots — the *Space Wars* fighters into the fray. They attack in spiral formation and are armed with torpedoes which track your ship with deadly precision.

The final conflict takes place when you confront the *Goffian Flagship*. Only the most skilled pilots should apply for this mission as you will have to blast your way through a force field and then launch a prolonged attack on the ship itself. It requires several direct hits on the *Goffian Flagship* to eliminate it.

At the end of the mission you will be given a rank based on your performance. Six grades are awarded them *Space Cadet* to *Space Avenger*.

Sign on for this challenge at

your local Commodore dealer. You will need a Vic-20 and £24.95 to join the good fight.

Three other new games carts are launched this month from Commodore for the Vic-20.

*Comic Jailbreak* casts you as the keeper of the *Comic Jail*. Stop the bad guys from all over the universe making a bid for freedom.

Many crime in *Money Wars*. This time you play the crook trying to get away the loot.

*Managetic* provides your chance to be a fixer for an afternoon. Guide the fixer through a perilous journey through a spider weaving, desert, and on to the mystical wall — winning rides on other animals as you go.

*Money Wars*, *Managetic*, and *Comic Jailbreak* are available now at £19.95.

## TREASURE HUNT IN THE DEEP

SHAW

*Shark Treasure* is one of the new batch of games from *Dragon Gate* for this new machine.

The idea of the game is to get your diver safely down to the ocean bed, pick up the treasure scattered over the sea floor and get it to the surface without being devoured by the killer sharks which patrol the wreck.

Also new this month is a shaggy rescue style game entitled *Whistled Fun*. You have to rescue the hostages (whilst avoiding the attack of jet fighters and ground tanks).

The games are due out in July and will be available from *Dragon Dealers* at around £19.

move to new premises at Canning Place beside the Mercury.

The new offices are a games programmers dream with an enormous room for computers — programmers and the various levels of the software writers team.

Above the programming department and offices is a computer tape duplicating plant which churns out all *Bug Byte* games.

## ENJOY THE JET SET LIFE STYLE

DOWNING

Fancy living the high life. Swimming around plush houses in expensive clothing, wearing away tens of thousands of pounds on a restless gambling spree.

If the answer is yes, but Daddy doesn't own an oil well, then you may still be able to get a taste of the jet set with this latest game.

You are *Bombin* — a wealthy dealer (you can who prefers printing his opponents into bankruptcy on the roulette table in his spare time is putting his feet up in his luxury home.

Feel you can take on his personality for an afternoon on your Atari 486/600 — if so you'll need the latest cartridge from *Bomb*.

Two other titles in this new range of games from the former video games manufacturers and *Pony Tadpole* and *Indisignity*. The *Tadpole* game challenges you to save poor little lost *Bobo* from being swallowed by the big fish in the tank.

*Indisignity* is a car racing game recreating the thrills and spills of the race track.

The games are imported into the UK by *Panzoom* of Grimsby and sell for around the £15 mark.

# NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS

# GAMES NEWS

## TOUGH TEST FOR ALL SPACE ACES

### KEXON

Fleet Commanders everywhere must prepare their pilots for the toughest test yet: The Ants. Paravations and the Empire Battle Star are missing on the outer reaches of Radon.

You are a commander in the Royal Space Academy an organization which protects affiliated planets from attack by pirates from other galaxies. The survival of Radon rests with your fleet. The aliens attack in three



waves — the Ants have the power to clone or dematerialize, leaving your fleet to wipe them out for good and all.

Survive this onslaught and you must fly on through obstacles — skillfully evading what you arrive on Radon.

Once you have touched down on the damaged planet you will soon be attacked by the Empire Battle Star. This final challenge will test on all your knowledge and skill acquired at the Academy if you are to repel its attack.

KEXON is a shoot 'em up for the 486 Duo from L.J.K. Software. The game is available now from the Blacktop based firm at \$9.99.

Also now from LJK for the Doc is a two game cassette with 3D Maze and Breakout on it for \$7.99. Candyfloss and Hangman are also available at \$7.99 — both for the 486 machine.

## SWEET TOOTH IS AN ANT'S DOWNFALL

### ROMAN

Ant-Eaters are a vicious breed of predators sniffing out their prey with that sinister long snout.

The same snouts will be sniffing out Atari owners to play the latest game cartridge from Roman.

You take the part of an ant trying to dig your way to the surface to pick up sugar lumps and take them back to your lair.

The ant-eater marches up and down on the surface. As soon as you break the surface it can pursue you down the tunnels which you have already created in your bid to get the sugar lumps.

Ant-Eater is based on the popular arcade game Dig Dug and should provide full competition for the official Atari Dig Dug which will go on sale next month.

On the first screen you face just one eater but these increase one by one as you move up through the screens and there are those of them pursuing you. There are also rocks which you can make fall on your pursuers and delayed-action bombs which you can detonate by remote control to blow up the ant eaters.

Three other new cartridges are on offer from this brand new Atari games firm — all in cartridge format.

Attack at CPD-4 is a scrolling shoot 'em up with various alien and space sectors to be penetrated.

Princess and Frog is a Frogger type game and Fortune Hunter a classic treasure room adventure.

In Princess and Frog a busy jousting field takes the place of the usual Frogger motorway. Mounted knights rush back and forth across the screen — and the frog must avoid their deadly lances.

In the river you'll find snakes and carpents instead of logs and turtles. An interesting variation of an overworked theme.

The games are available from Atari dealers now or direct from Surrey based Roman at £29.95.

## C & VG's COMPUTER GAMES TOP TEN

### ZX81

1. Flight Simulation (Pilot)
2. 3D Monster Maze (New Generation)
3. Chess (Pilot)
4. Space Raiders (Pilot)
5. 68K Scramble (Kilobaud)
6. Salutations (Antic)
7. Alien Empire (Silverbird)
8. Avenger (Atari)
9. 10 games for 16, 13, 8, 6bits!
10. Night Gazer (Digital Integration)

### Vic-20

1. Assault (Imagier)
2. Panic (Big Pye)
3. Sticky Walkers (Imagier)
4. Commando (Big Pye)
5. Dutch Struggle (Imagier)
6. Asteroids (Big Pye)
7. Golf (Commodore)
8. Amok (Kilobaud)
9. Alien 888 (Kilobaud)
10. Chapter (Creative Software)

### Sinclair Spectrum

1. Flight Simulation (Pilot)
2. Jet Set (Kilobaud)
3. Pacemaker (Melbourne House)
4. Horse race 96-ing (Pilot)
5. Acropolis (Imagier)
6. Transylvania Tower (Wizzard Shepherd Software)
7. Mr. Goldbug (Imagier)
8. Hungry Heroes (Pilot)
9. The Hotel (Melbourne House)
10. Space Raider (Pilot)

### Atari 400/800

1. Gix (Atari)
2. Galaxies (Atari)
3. Defender (Atari)
4. Zaxxon (Data Soft)
5. Pac-Man (Atari)
6. Star Raiders (Atari)
7. Miner 2049er (Big Pye)
8. Centipede (Atari)
9. Missile Command (Atari)
10. Space Invaders (Atari)

## GAMES NEWS

## RETURN OF THE WOOLLY JUMPERS!

## WORM GAMES

The first seven titles from Virgin Games, the new spin-off from their recent publishing empire, have just arrived.

Peculiarly there are several space shoot 'em ups with titles like *Starline*, *Mission Mercers*, *Space Adventure*, and *Lanethell*.

In a slightly more original vein is a game called *Sheepwalk* for the MS Spectrum. You control Rex the sheepdog as he rounds up the flock that have escaped from the pen. Being careful not to let Rex get too close to the sheep is more than he must also be swift if he is to stop the sheep-eating Farmer Brown's prize riddles and tortures. See the Reviews pages for our opinion on the game.

The second most original game in the batch is *Bug Bomb* for the BBC which challenges you to rid electronic grids which provide power for the cities of mutant bugs.

Other games in the range include *Tom* — a Frogger type game in which you have to get your soldiers across a lava road.

Golf fans can also play the game on their Spectrum with a simulation for the 32 or 48k machines. Virgin games are in the shops now at £7.95.

## THE AWESOME ROBOTS AIM TO KILL!

## ANDROIDS

If you think of cute characters like Metal Mickey when somebody mentions robots then forget it. Start thinking about homicidal laser-spitting death droids!

In *Androids*, the latest game from Sunshine Software of London, you are being overruled through a maze by the robots. You are armed with a gun — though this has limited fire power and will have to be replenished from time to time by walking over the coloured squares.



*Androids* is available from Sunshine at £4.95. The game will run on the Spectrum in 32 or 48k.

Also new from Sunshine this month for the Spectrum is space shoot 'em up called *Galaxy Attack* for the 48k machines. Your ship has crashed on a distant planet. It's a race against time to rebuild your craft in time before the alien Walkers reach it and blast your defences away.

## GIVE YOUR GAMES SOME STICK!

## CONVERSION

If you have invested £20 in a joystick for your Spectrum and then when you get it home found that some of your favourite games are not joystick compatible then you will be pleased that a solution is at hand.

Kempston — the software division of the joystick manufacturers — have written two conversion tapes.

The *Conversion* tape is loaded into the Spectrum. A menu appears from which you select the game conversion you require. This is then loaded and you then load your chosen game in the normal way.

Tape one converts *Hungry Harold*, *Horace Goes Skiing*, *Flight Simulation*, *Accords*, *Penetration*, *Spectrum Spectra* and *Source Demiles*.

The tapes cost £3.95 each and are available from Kempston Micro Electronics of Bedford.

## GAMES TO LAST A LIFETIME!

## JUMPING JACK

The next range of games will take "hard a lifetime" to get through all their levels.

It is a range of three games due to be launched in early July, two of them on the Spectrum and one on the Commodore 64.

As we go to press the details are few and far between but we do know a little about *Zoom* (previously 816), and the other two are *Op-Zap* (Spectrum) and *Arxide* (64). Both are arcade games featuring more levels than the average player will ever be able to accomplish.

We can reveal that the company is Imagine Software of Liverpool and the game is a 48k only cassette for the Spectrum.

Three games are to be previewed but according to Imagine the main reason for the trade preview is to show off the new 48k game.

Already in the shops from the Liverpool firm is a new game called *Jumping Jack*. This is the first Imagine game written by a freelance programmer but, like the majority of the firm's other games, is based on an original idea.

You control a little character who appears at the bottom of the screen. Move him into several parallel lines — making platforms which he must hop on to. The key

is to wait for just the right moment when the gap in the platform appears and then hop up at just the right moment.

Each time you get to the top of a screen you are given one line of a poem — providing an added incentive to get to the end of the game and discover the rest of the verses. *Jumping Jack* is available from most Sinclair software shops at £5.95.

We have 100 cassettes of *Jumping Jack* to give away this issue. See page 110 for details but be sure you're quick off the mark.

## EVIL BIRDS ARE OUT TO GET YOU!

## ZOOM

Zoom through the skies, beat your way through the enemy and try to save the last survivors of the human race.

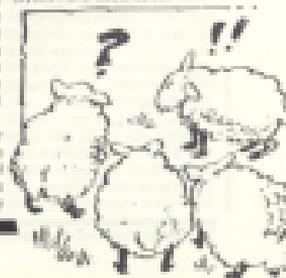
This tall order is the object of the latest 3D challenge from Liverpool-based Imagine Software.

The screen shows you a view from your ship's cockpit. You have to fly over different landscapes, rescuing the survivors and refuelling — this keeps your protective shields activated.

But watch out for waves of enemy aircraft, banks of wind-milled birds and swarms of missiles are all chasing you, bent on your final destruction.

The more people you rescue, the higher your score. This involves some daring low-level flying. Use your bombs and machine guns to protect yourself from the deadly aliens and their weapons.

*Zoom* runs on a 48k Spectrum, is controlled with the keyboard or a Kempston or Fuller joystick and costs £5.95.



# VIDEO



## PLAGUE OF SWARMERS PODS AND BAITERS!

### DEFENDER ACES TAKE UP THE ATARI CHALLENGE

Pop stars David Van Day and Gary Numan will be presenting prizes at the National Association of Boys Clubs Atari Defender Challenge.

Up and down the country members of the association have been blasting away at the Pods, Swarmers and Baiters to clock up high scores in the hope of going through to the final at the Hilton Hotel on Saturday 20th June.

Of the 10,000 entrants just sixteen super skilled finalists will be flying away for the coveted title of Defender Supreme.

You'll have to wait until next

month to find out the winner but I can tell you some of the finalists clocked scores in the region of 100,000. Like Anthony Brooks from the London Springfield Club who entered as favourite with a smashing great 110,000 and South West regional champ Stephen Harvey with alien-crunching 97,000.

Can you beat the Atari whizz-kids? If you've topped 100,000 drop us a line and tell us about it.

The sixteen finalists will enjoy a no-expense spared weekend of fun courtesy of Atari UK including a trip to the Thorpe Entertainment Park and a visit to the



cinema to see Return of the Jedi.

The highest scoring Defender player will also take home a video cassette recorder and win an Atari 800 for his club. Runners up will receive the latest Atari game releases.

## NEW GAMES FROM PHILIPS . . .

They are here at last — the first batch of independently produced games for the Philips 57000 System.

Versions of successful Image Games — Demon Attack and Atlantis — are now in the shops for this game-starved machine.

Demon Attack is one of the toughest shoot 'em ups available for the Atari VCS and should give a tough fight to Philips owners as well.

In multi-wave players look good as well as giving a bigger burning challenge just like the versions already seen on the Atari system.

Atlantis has also sold well on the Atari and Intellivision machines and is therefore another obvious choice for Image to convert to the Philips.

The game challenges you to protect the beautiful lost city of Atlantis which is under attack from the surface.

You have three cannon installations from where you must attempt to blast the aliens. The games go on sale at the end of July at around the £25 mark.

The Philips range of games now makes Image the video games company with the widest number machines at its range. As well as the Atari VCS, Intellivision and Philips they now produce games for Colecovision, Vic-20, and the Atari 400 and 600 home computers.

## VIDEO VILLAINS CONTEST WINNERS

Did you spot the Video Villains in our June issue's special supplement, The Book of Video Games? Are you one of our winners? Read on to find out!

They were an ugly bunch — that Mad Bomber from Activision, the nasty Amstar pig, and Superman's arch enemy, the evil supervillain Lex Luthor. We asked you to place three tough characters, plus four other video villains in order of toughness. Here in the CAVS offices we worked out our own order — which you may or may not agree with — but we're naming the contest. OK?

Top of our tough villains list, the one who would give you the most trouble on the video screens of the world is the Mad Bomber from Activision's Katakam. Second came the cop from Lethal Weapon, then the Amstar pig, the warrior (he from Quest for the Rings, Lex Luthor from Superman and finally the fairly hairless desert nomad from Robo of the Spies.

The first three correct answers out of the hat came from Brian Cobb, of Newark, Nottinghamshire, Miles Pennington from Hampton, Middlesex, and Guy Webster from Malvern Wells

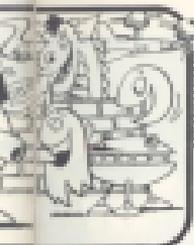
in Worcestershire. The lucky winners will receive five brand new cartridges of their choice courtesy of the new specialist video games shop in West London — the Gap Video Games Centre.

Brian has chosen Demon Attack, Auto Racing, Atlantis, Demons King and Golf for his collection. Miles has gone for a

series of games including Turbo, Golf, Cannon and Venture for his Colecovision system. We're not sure what Guy wants as he was at school when we called to tell him of his good fortune!

The ten runners-up will receive five boot-loader style video game cartridge holders, specially designed by Gary Viner.





# GAMING

## I GET A KICK OUT OF YOU!

### THE BIG MATCH ON YOUR GAMES SYSTEM

Alan United make a pretty strong team. They finished the 18.2, 15.5 and by a couple of margins which I've got no intention of repeating here.

These international superstars have been bought at staggering transfer fees and set in alliance to make one of the hardest to beat soccer games you can buy.

The new RealSports game is at its best when two people play. Taking on the VCS itself is neither Manchester United versus Stoke Pops All Stars on an off day.

You can select the length of the game and choose whether to play against the computer or a friend. The pitch scrolls horizontally. Possession of the ball is maintained by depressing the fire button on the joystick.

To pass the ball first select the player you wish to pass to by pressing the fire button.

This will make your three players glow white in sequence — when the chosen player is white move the joystick in his direction and pass to him once more.

Mastering the pass procedure is the key to getting full enjoyment from this game. It'll take a lot of practice to get it right — but once you master it playability

of the cartridge takes a quantum leap forward.

A nice touch on this soccer simulation are the sound effects. You get the cheer of the crowd and the referee whistle when a goal is scored.

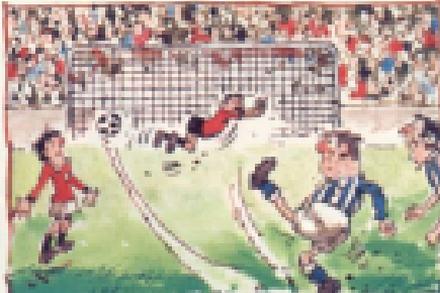
A major improvement on Atari's earlier soccer cartridge. The game will be in the shops in July at £29.95.

If you look hard enough you may still find a Polo Soccer in a faded box amongst all the new games. Chances are it'll be at a knock down price and, at around £25, it'll give you an adequate game football match at £10 less than the premium priced RealSports version.

The old Polo cartridge differs from the new one in that it shows you a vertical view of the pitch with the players scrolling up and down screen.

Again you control these players by getting passing to much more of a hit or miss affair than with the new version and the graphics are very basic in comparison. The footballers look more like little robots than live flesh and blood.

The computer makes a tough opponent — though not as tough as in the RealSports cartridge.



Polo Soccer has one really interesting trait.

Each time a goal is scored you are treated to a celebratory fireworks display.

This is quite pretty the first time around but when the VCS has kicked in its tenth goal to your nil it becomes quite simply annoying.

The third option for football fans wishing to play the game on their VCS comes from Mental and is just one of the games in the new IM Network range.

This will be the cheapest of the trio retailing at around the £15 mark.

Another vertically scrolling game through you have four players instead of three as in the Atari cartridge.

IM Network International Soccer will provide the real competition for Atari RealSports Soccer when the few remaining Polo Soccer cartridges are withdrawn or snapped up.

CVS's version on the Soccer cartridge — the RealSports version is the superior game though if you buy the IM Network game you may have enough spare cash to get another game or even a new joystick to help you score the winner!

## CONQUERING CONVERSIONS

Activision recently showed off their new releases at a special press preview in London.

The Miles seems to underline the leading games firm's commitment to developing original games rather than buying licences to convert hit arcade games like Atari and Parker Brothers.

The most original of the trio is Quik which offers the best video game I've seen and certainly puts those yank Miles from Amstar in the shade.

The idea of the game is to protect your little powder from the big bad wolf who is huffing and puffing in his attempt to blow your wolf down.

Every time he blows a brick

out of the wall you've got to replace it to score points.

Realisation owners have been included in the new Activision releases though still nothing for you £7000 gamesters.

Happy Trails is the name of the final game and you play the part of a croaky old prospector searching the hills of the old west for treasure.

The screen is made up of a spaghetti junction of trails. You don't mind the old chap — but mind the sections of trail, figure fashion, to make a continuous track.

Happy Trails is the work of Carol Shreve of River Road fame so the game has a lot to live up to. Don't miss next month's C&EG to read joystick Jun's judgment on this new cartridge.

The third offering from Activision is for the Atari VCS — called

Deepsea, and looked at first glance like the dullest of the bunch.

Your task is to rescue divers who are returning to the surface with treasures of the deep.

Deepsea is in the shops now at £29.95 as is Happy Trails at £24.95. Both will be in the shops in August, also at £29.95.

## ACTIVISION'S GAME SET AND MATCH

With the top tennis stars playing it out on the centre court at Wimbledon many of you will be glued to the TV screen.

Should you decide to plug in your VCS between sets what better cartridge to choose from than Atari's new tennis challenge in the RealSports series.

Featuring a 3D perspective you are carving into the screen — facing your opponent — rather than the early horizontal play-style tennis.

The new Atari cartridge is an improvement on the existing Activision Tennis cartridge.

It has a score board which enables you to write in your name and that of your opponent.

Authentic tennis scoring is a feature of both Atari and Activision tennis and you can play against an opponent or take on the computer.

For superior graphics the Atari cartridge gives the most convincing game of video tennis though at £29.95 you may find it a good deal dearer than its Activision counterpart which has been around for a couple of years now and therefore selling at a reduced price.



# Games

## A name to PLAY with



**GOLF** Available on 16-bit and 32-bit systems  
If you're a fan of the classic **GOLF** 16-bit version, you'll love this new 32-bit version. It's a real gem.



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Computer FUN... available NOW!

# VIDEO



## SKIP THE SKIPPER!

A brief fixation with Nintendo's Sky Skipper is the greatest way back in autumn of 1983 whetted my appetite for the forthcoming Atari version. Unfortunately it has suffered much in its conversion.

The original featured cute graphics which involved sharp joystick control to bomb ships over a city skyline and rescue animals.

The graphics looked somewhat sludgy and were flayed by being hit on the bones by the pilot's bombs.

The VCS version has a maze taking the place of the skyline and although the plane is capable of the same instant maneuvering, it is more difficult to end up facing the right direction on a VCS joystick — and this is a game where control is critical.

Upon bombing (and during) the gorilla, the player releases a series of rapid birds or animals which he must free rescue by flying into them.

It is a game of millimeter control and usually ended with me complaining that had I hit the joystick to change direction but it

had not registered, very frustrating but not as addictive as it should be.

The mania does not throw nuts although clouds cause problems on later screens and the game speeds up considerably on the fifth screen difficult to achieve with regularity. Four skill levels and the usual Parker packaging for £29.95.

### THE VERDICT

A game which badly misses the sharp carto graphics of its predecessor and becomes dull all too quickly. There's better to be found in the Parker catalogue.

- Action 2.5
- Graphics 4
- Addiction 1
- Theme 4.5

Having porped myself on dozens of forms at Mattel's Burgertime I was with great anticipation that I plugged in the next cartridge from the company. Alas, Vectrix is not in the same league.

The idea of the game is to fill in each screen with gnuver blocks and erasage them. The blocks are made to appear by depressing the fire button on the side of the controller. Level a laser blast at it by manipulating the control disc. This erasages

the block. When the play area is completely filled with charged blocks you can then go on to the next screen.

All the time you are trying to fill the screen you are under constant attack from the aliens. These come in different varieties and the toughest ones are saved for the later screens.

Each new screen is a different shape to the previous one and will necessitate a modification of strategy.

To fire your laser gun you simply move the disc in the direction of the target and the gun will fire automatically. An original game — but a far from good one.

Everything on the screen appears to move except for your laser beam which is a permanent feature at the top of the screen.

You open out laser fire in all directions without rhyme or reason as it is impossible to tell which is the main aim — killing the aliens or filling the blocks. The result of this is the achieving other graphic's satisfaction. Vectrix is in the shops now at £29.95.

For a far better investment check out Burgertime or Pitfall.

### THE VERDICT

An original idea — but a very dull game.

- Action 2.5
- Graphics 4.5
- Addiction 1
- Theme 4.5

Smurf Rescue is the latest cartridge ever to plug into a video games console. If anyone ever asks you how good are the graphics on ColecoVision plug in the Smurfs and let them see for themselves.

The idea of the game is to rescue the Gargamel who is being held captive in Gargamel's castle.

As the gallant Smurf you must walk through fields, forests, caverns and finally into the spooky castle itself.

To thwart your rescue bid the evil Gargamel has trained bats, hawks and spiders who drive both you as you make your way to the castle. By putting back in your controller you can duck down to avoid them.

As you walk along the path other obstacles must be hopped over such as mounds, logs of grass, and fences. By timing your jump carefully you can land on just the right spot to pick up bonus points.

The graphics of Smurf Rescue are what make the game. The bright colours and pleasing walking movement of the Smurf make it very similar to the actual character.

To enhance playability there is an energy level rating which goes up and down according to how quickly the Smurf moves through the various stages.

Just one gripe — with the joystick rather than the game board — it's really difficult to manipulate the disk to make the Smurf run into a jump without the controller slipping in your hand. Roll on the new improved ColecoVision sticks — these should improve Smurf and most other ColecoVision games.

### THE VERDICT

Beautiful to look at, but not the toughest game you'll come up against.

- Action 4.5
- Graphics 4.5
- Addiction 4.5
- Theme 4.5





# GAMING

## PLUG INTO THE ARCADE

Atari keep the arcade conversions coming thick and fast with two new titles lined up for a September release.

Galaxians will need no introduction to the more seasoned videogamers as it was a monster hit in the arcades at the height of the post-space invaders boom in the early 1981.

It will be interesting to see how well it does on the VCS having been so long out of the arcades. My guess is that it may be just a little bit too late as there are already dozens of good shoot 'em ups already available for this machine — Demon Attack, River Raid and Defender to name but three.

Slightly more up to date is the Atari home version of Jungle Hunt — Yoda's Taxxon and Jane's adventures. You must rescue the fair maiden from the cannibals who have carried her off — swing through trees — wrestle with crocodiles — all whilst lusting staff for VCS owners.

On a more educational level come the first two Atari Sesame Street titles for youngsters. Cookie Monster and Sonoran Castle will be in the shops soon

TOP TEN			
GAME	MANUFACTURER	GAME	MANUFACTURER
1 Phoenix	Atari	5 Donkey Kong	GBS
2 Pac-Man	Atari	7 Defender	Atari
3 Frogger	Parker	8 Ms Pacman	Atari
4 Yanguard	Atari	9 Demon Attack	Inmagic
5 River Raid	Atvision	10 Space Invaders	Atari

All the above cartridges are produced for the Atari VCS home video games centre.

with more educational titles on the way for Christmas.

The games licensing business is heating up with several big arcade games being bought up by Atari, Colecovision and Mattel.

Atari have Pole Position, Frogger, Joust and Moon Patrol all poised to attack the Christmas market. Neither of Atari's main rivals on licensing — Parker Brothers and Coleco — are going to sit back and watch this new batch of games arrive in the shops unchallenged.

Parker have Tatanthan, O'Berst, and Super Cobra, all of which will be supported with the traditional Parker TV advertising bills.

The Colecovision trump card games will be Buck Rogers, Donky Kong Junior, and the new Super Zaxxon — though the main thrust of Coleco's TV advertising campaign is likely to concentrate on selling the Colecovision itself.

Individual owners will share some of the action with three hot titles signed up from the Japanese arcade scene — Data East.

Burgertime and Mission X have already been converted for home use.

Also in the pipeline is a factory road race game where your car can leap into the air.

One thing is certain — even when you are not using your TV set with your games console you are going to see a lot of games on television over the next few months.

## THINGS GO BETTER!

Coco Cola — that famous soft drink — is now available as a video game! Every time you buy a can from an American made vending machine you get a game on a video machine.

The new vending machines

have a built in screen measuring 6 by 4 inches which gives a free 30 every time you buy a coke.

The game is called Coca-Cola and you play the part of a hard-passed delivery man who is being showered with coke cans by a mischievous monkey perched at the top of a palm tree. The more cans you catch the greater your score.

To stop long queues gathering at the coke machine the game has been made so tough that it will only last around 30 to 35 seconds. The owner of the machine can adjust the skill level to make it still tougher if necessary.

Coco Cola say the video game is as a sales tool and believe it will encourage America's army of games-mad teenagers to buy more coke! One of those exciting new machines will be coming to this country during the summer — but exactly where it will end up is still a mystery.

## IT ALL LEADS TO A TOP PRIZE!

... And just as I was about to beat Derek's Laser Space Blast record, I jerked to the right, the joystick wiggled frightened and went spinning from my hand. Helpless I watched as the alien took my last life."

Every TV gamer has a story like this. A sorry tale of crossed wires, joystick plugs loosed at critical moments and torrents of flux.

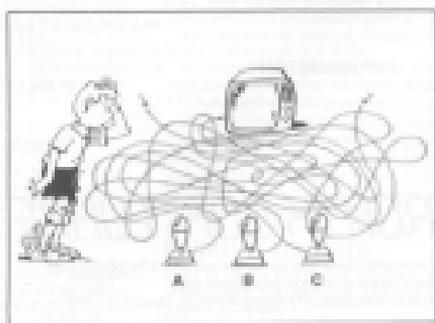
We're offering the chance for five of our readers to end joystick pain forever. There are five Games Remote Control Joysticks to be won in our Crossed Wires competition.

Look at the picture of a con-

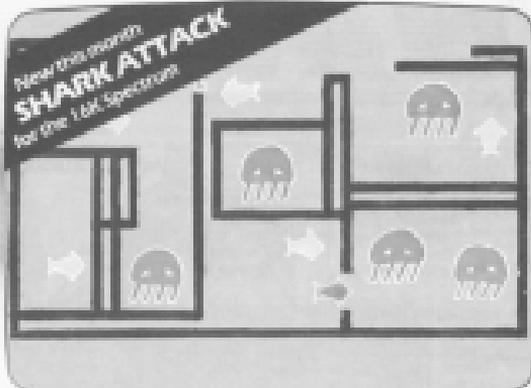
fused games player frighted and see if you can work out which joystick he should use to play the game.

Unfortunately a wind tangle of wires has made the choice more difficult than it ought to be. If you can work out which joystick our gamer should pick up, send it in to Crossed Wires, Computer & Video Games, Dorset House, Herbet Hill, London EC2R 5NR.

We need to receive your entry before August 12th, then the first five correct entries out of the barrel a Games joystick worth £70. Usual Computer and Video Games competition rules apply.



New this month  
**SHARK ATTACK**  
 for the 1.6k Spectrum



## GAMES THAT ARE HARD TO BEAT

Why? Because every single Romik action game is professionally written in machine code to give you all the thrills and action of a fast-moving arcade game. Every one recorded on top quality tape, most of them playable either from the keyboard or with joysticks.

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Romik games at least one new game every month and soon there'll be Romik games for the Am and Lynx computers.

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Space Farmer	Planet Invaders

#### MultiSound Synthesiser

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Time Destroyer	Moons of Saturn
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#### BBC Model A or II

Ship of Troy	Alien Invasion
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#### Dragon

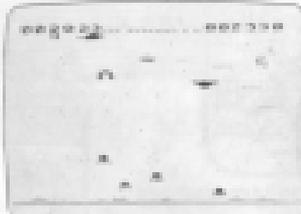
Stargate Challenge

### ALL THE ABOVE GAMES COST £1.99 EACH

SuperStar - 4 UK games	1.99
Galactic Trooper (54k)	1.99

### T&C ON 1.6K SPECTRUM

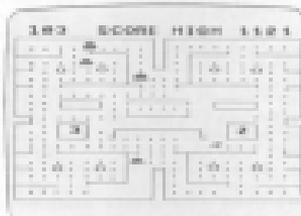
Colours Dash	1.99
Galactic Trooper	1.99
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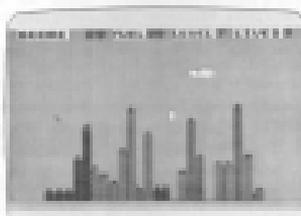
TIME DESTROYER for the expanded VIC 20 (8k +)



SEA INVASION for the BBC or expanded VIC 20



MANANT BUSTER for the expanded VIC 20



SUPERSTAR for the 1.6k Spectrum

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Phone  Company

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**TOP SECRET . . .** Robert to all readers . . . message begins . . . After a tough journey I've managed to get right into the C&VG office while remaining inconspicuous. With great difficulty I've erected a transmitter on the roof so that I can send my reports safely without them being intercepted.

**It was awful! There were bugs everywhere. But not any more. The office is now completely free of bugs and I shall stay here for as long as it takes to assure that this reign of terror can never return. I'll be reporting monthly on any infiltration of the magazine's pages, and will keep you informed . . . message ends.**



## BUG HUNTER

All bugs have now been banished, even in return, and the computer room has been pronounced bug free. All that remains to complete the clean up is to remove those bugs which were in existence before I arrived . . .

### ATARI — TEN COMMANDMENTS

Firstly there was the Ten Commandments game for the Atari on page 84 of the June issue. Many of you were having problems with line 3400. I have now been assured by the author that this line is not necessary and may simply be deleted.

### ORIC — SNAKES

Although Snakes for the Oric on page 83 of June's issue was bug free when I left our reviewer, Mal Function appears to have caught it while the printer's back was turned.

The small squiggle in line 30 is supposed to be a quotation mark, and the one after line 130 is, as usual if you realized, the start of line 80.

No contact with interpreting with the printing. Mal has also changed the keys which the instructions say are used to control the direction of the snake.

Despite the printed instructions the snake is controlled as follows: ↑ up, ↓ down, ← left and → right. You can alter line 130 to use any keys you wish, I preferred O and A for up and down and C and W for left and right.

If you wish to use the cursor keys as in the instructions, you will have to substitute the letter in quotes in line 130 to read CHR\$(2) where 2 is 8, 9, 30 and 11 for left, right, down and up respectively.

Another tip for Oric owners comes in to courtesy of the Tangent Users Group. If you intend to use a lot of string space in your program, you may find that the strings overwrite the character set in RAM. This can be cured by making the first line of your program `HEMEM = #HEM`.

### VIC 20 — GHOST TRAP

Although the instructions say otherwise, use the I and X keys to move left and right. If you'd rather use the cursor keys as printed, change lines 184 and 188 to `I X=11` and 80 respectively.

### TI 99/4a — SKI-ING

Texas owners, I admit, have suffered badly at the hands of the bugs. Most recently there was the Ski-Ing program, for which we sent out many hundreds of correction sheets with what we thought was the definitive version.

Well, it was . . . almost! The screen positions for the gates are held in DATA statements as screen coordinates but they appear to be the wrong way round in their pairs.

To correct this, alter the READ statements in lines 290 and 300, 298 should now read READ B,A,C and 300 should be READ B,A. The program will then work. I know — I've played it myself.

### SPECTRUM — CANTON LANDER

Another attack on our instructions came in Canton Lander for the Spectrum in the May issue on page 88. Although the instructions say that control is through the I and O keys, it should read I and 0. This is controlled by the IN statement in line 130 and can be changed if you wish. The relevant IN locations are in the Spectrum manual.

### VIC-20 — PROTECTOR

Not really a bug this, but it puzzled quite a few of you struggling with Protector for the Vic on page 88 in June. When run, the program appears to stop and do nothing: it is in fact waiting for you to start the game by pressing the fire button on the joystick. This is accomplished in line 90 and can be altered or removed if you wish.

### HINTS AND TIPS

As far as I know, the bugs are now written — at least until next month. Remember, this is the page which you help to write. So if you have any suggestions about how a C&VG program could be improved please send it in.

We would also like to know about any tips for mirrors in general. I'll pay \$5 for any which are published. Tips for this month are for the Sharp and Vic-20.

For the Sharp comes a correction of Mad Max, published for the MEEK in May 85. To allow the program to work with disc bases the program should be altered as follows:

```
Replace POKE 37800,DET AS WITH  
USR$(DT,AS) = CHR$(PRC$(DET))  
and install the machine code by adding  
these two lines:  
1 LBRND(ENT) = ENT*FOR XT=0 TO 0  
2 READ DA, POKE DT, DT+INDET  
3 DATA 20,17,2,9,20,21,21
```

Also, errata Leonard of Penzance, if the last variable on line 515 is changed to 18 then the right person will get the credit for the highest score.

Final tip is for the Vic owners trying to use a 18K expansion to play Langer from the April issue. It comes courtesy of Mike Davies from Dyfed, Wales.

Before loading listing one, load the following program:

```
1 POKE 3680,PEEK(3680) OR 11  
2 POKE 3610,POKE 3611,3-POKE  
3612,3  
3 FOR A=40 TO 50:READ B: POKE A,B:  
NEXT  
4 NEW DATA 1,2,11,2,11,2,11,3
```

Then change listing one: line 5 becomes `POKE 3687,5` and 50 starts `FOR I=4120 TO 5011`.

Finally change all values in listing two between 3680 and 3685 by subtracting 255H, then change all values between 3680 and 3685 by subtracting 512.

To complete the change, change CL in line 630 to read `CL=3780`.

To reset your computer to a 30K machine after playing the game type 275 4454 and all will be normal.

Finally, for those Sinclair owners who wondered why there were two Spectrum programs in June and no ZX81 programs, Ecco's V is in fact for the ZX81 and not for the Spectrum. Crossed wires in our production department!

### BY ROBERT SCHIFREEN

Write to me at: Bug Hunter, Computer & Video Games, Gerrard House, Herbol Rd, London E12 6JH



# Announcing more exciting programs for the BBC.

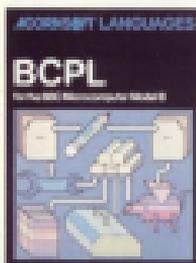
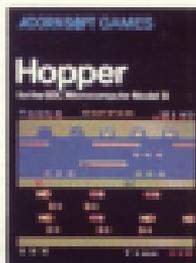
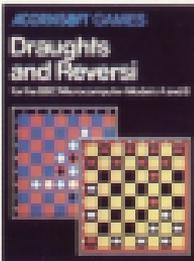
Acornsoft is the software division of Acorn Computers, the company that designed and built the BBC Microcomputer. Here are four more exciting programs, all designed to get the most from your BBC Micro.

**Magic Garden (B995)** is a cassette-based on Shirley Conran's successful book. It's a problem-solving program which provides the complete beginner with instant answers to the questions of what to plant and where. Simply tell the computer whether you prefer a shrub or a flower, the type of soil, light and shade conditions and required flowering time and the computer will come up with a selection of possible plants.

**Draughts & Reversi (B996)** is a cassette containing two traditional board games for you to play against the computer. Both give a graphic display of the board on the screen and you can enter your moves with either keyboard or joystick. The games can be played at varying levels of difficulty and on the higher levels you will find the computer to be a very worthy adversary.

**Hopper (B994)** is a game on cassette which can be played with either keyboard or joystick. Hop the frog across the busy roadway trying to avoid four lanes of fast-moving traffic. To get across the river to the frog's lair you must leap on to the logs and timber barks, but beware of the diving turtles, the crocodile and the snake.

**BCPL (B996G)** is a flexible modern structured language that's very easy to learn. The package consists of a BCPL language ROM, a 40-track disc and a 150 page User Guide. The disc contains the BCPL Compiler, a Screen Editor and a 6802 Assembler. BCPL is particularly good at handling Input and Output and is ideal for writing utility programs and for developing games and commercial packages.



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Alternatively, you can buy the programs directly by sending off the order form below to Acornsoft, c/o Vector Marketing, Divington Estate, Wellingborough, Northants NN8 2HL.

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# ACORNSOFT

# ARCADE

## SPACED OUT LASERS



### PINBALL

Fancy combining your interest in pinball with becoming a famous film director? That's the offer being made by the Pinball Owners Association.

The association is planning a 30-minute video about their favourite pastime — and it will be produced by a top video company based in London. All you have to do is come up with an original idea for a script.

If you want details of the competition, which was launched recently by the association, or if you reckon you have a good idea for the screenplay, write to the Pinball Owners Association at "Arcade", 465 Chiswick Road, West, Uxbridge, Middlesex UB8 3HEM.

You can also help out the association by telling them where there's a good pub with some pinballists! They have been forced to move from the pub used for monthly meetings because all the pinballists have been taken away. So members are looking for a good pub in the Greater London area that has a couple of tables and would welcome their return. Any ideas?

Things are quiet on the pinball front at the moment with few new machines hitting the market. However, Gottlieb are bringing out a machine called Royal Flush. This is hardly a new table to pinball fans as it's a remake of an older electromechanical game. With Bally rehashing their classic Eight Ball Deluxe machine recently perhaps this shows a lack of new ideas among the manufacturers. But with innovations like the still mysterious Williams Jaws double ended machine, perhaps we're talking too soon!

Good news from America is that the home of the pin is seeing a small revival in interest in pinballists among arcade owners. They are finding that a recoin-stained table often takes more cash than one of the older and less popular video games.

Laser disc technology is in the British arcades with the exciting Astron Belt game.

As we write Arcade Astron this month, still only two of the systems have found their way into the country and only one into an arcade: the Crystal Rooms arcade at Leicester Square in London.

In the search for ever-increasing realism, laser disc games which use film rather than computer graphics seem to be the future. And the arcade industry is keen to get its grip with it.

Importers, Total Electronics are selling containers full of Astron Belts before they even reach these shores and the machine is being hailed as the saviour of arcade gaming.

But as in most pioneering ventures, Astron Belt has a few rough edges as a game and should be judged as a hint to what will be possible in arcades within the next year.

The game is set in space and features a Buck Rogers type craft, composed of computer graphics, superimposed on a "real life" background.

As the player controls the craft it sweeps across the screen, while behind it, the laser disc film features dark moons, and planets, comets, a dreaded black hole and all the other scenes you might expect to find in a space odyssey.

The flight takes you over also lends space through

### ASTRON BELT

Orbitular box space stations and up against the enemy craft.

The game reacts to your fire by exploding ships which it judges you have hit, and turning the screen into a follow at fire.

The controls in the cockpit feature a futuristic steering wheel set in front of a large 20" colour monitor but the game also comes in a stand-up cabinet with a standard screen and joystick format.

Laser discs do not wear and are easily changed, so that a cabinet-arcade installed can be allowed to provide the latest game. Rumour has it that the next laser disc game available for the Astron cabinet, will be a driving game composed of real race scenes and even car driven by experienced grand prix stars.

So you could line up on a starting grid next to James Hunt!

Realism in the cockpit model is enhanced by a stereo sound system which emanates from just behind the player's seat and a vibro-seat which gives realistic vibrations which are supposed to tie in with the game. Actually it shudders and vibrates in the explosions for more than is comfortable.

On the monetary side, it's 40p a turn or £1 for three goes which shows the expense of producing these cabinets. But any arcade player who wants to have a li-

sure in gaming should try his hand at Astron Belt as soon as possible.

However, it remains to be seen if Astron Belt is the shape of games to come.

And if you want to see as much scenery as possible, put in plenty of money before you start as the game will let you continue from where you left off.



## TIME TO TAKE YOUR PICT!

### INDIANS WALL

The British invasion is over with the Romans victorious which is pretty tough if you're a Pin in the wrong side of Hadrian's Wall.

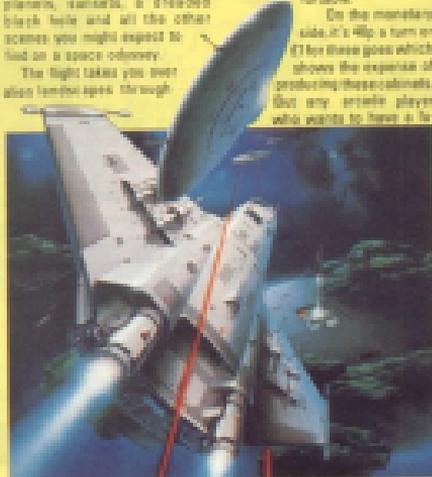
That famous feat of Roman engineering is the setting for a new game which bears little resemblance to early A.D. history.

You play the part of a last survivor of the Tartan horde, stuck behind enemy lines and wanting to get back to the glen.

Armed with a joystick and a jump button, you run along the battlements jumping over cracks in the wall and dodging fireballs and arrows hung at you by the pursuing legions.

A solitary Roman occasionally patrols the moat below the wall and will fire rocks and arrows at you which have to be dodged. It is all set against a timer and if you can't complete each part of the wall in time, then you may face the dread Roman on the wall. He comes straight for you and that's little hope of escape.

If you do manage to get in the top of the wall then an ancient Roman escalator will take you the over and freedom. Jump into



# ACTION

## FUN WITH FIREBALLS...

your feet and away you sail — down the river Sardinia fashion — until you are back in familiar territory.

Back in Loch Ness and who's been waiting for you? Nessie roars her head from the depths and before you can smooth your kilt, you have to rock over and send her packing — back to the primordial muck while you go back to the wall to bring the next Pict team. ... only this time the going gets harder, more arrows, less time.

## CAPITAL OF THE VIDEO GAME WORLD

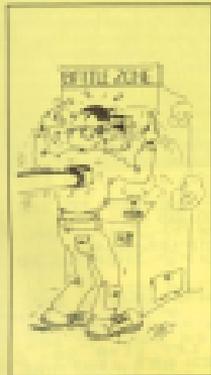
### OTTUMWA

If you fancy yourself as an arcade champion then there's now a way to get your name regular around the world.

A place in Iowa State in the US, going by the unlikely name of Ottumwa, has set itself up as the arcade game capital of the world.

The Video Game Manufacturers' Association has approved the Ottumwa set-up and the town now houses the only official international scoreboard for video games.

Players call in their scores by phone and have them registered after being verified by the local arcade owner. It is currently receiving 50 to 60 phone calls a day at 01 01 575-684-9021 from Britain and ask for Walter Day.



Asteroids were mean but at least they travelled in straight lines. In *Mad Planets* the rugged heavenly bodies having developed homing instincts will prove decidedly tricky for all space sliders!

A Dick Rogers physics-computer with the button and a spinning paddle lies between your craft and collision course.

The planets wheel on to the screen as red fireballs, rapidly forming into Earth-like planets complete with rotating moons. While in football mode the planets are vulnerable to your fire, but otherwise they are invulnerable and their moons must be jacked off first.

The moons sometimes fly out of orbit, falling into red dust and, if ignored, these too will turn into planets. If too many planets survive on the screen a red super planet will be spawned by one of

### MAD PLANETS

the spinning moons.

In order to clear the screen, you must first blow up at a planet's moon — it then turns red and becomes vulnerable. It also hurtles around the screen as it orbit decays.

A cleaned screen results in a fresh batch of yellow fireballs and then you move on to purple ones. If you succeed in clearing the third onslaught, then comes a bonus screen in which spacemen fly through the void.

These must be collected for bonus points and blowing up a huddling meteor will increase the number of spacemen on screen.

Good graphics and speedy action in which you can never let your finger stray far from the fire button. One tip — don't get caught in the corners.



## ALIENS IN STEREO

### GYRUS

From the outer reaches of the Solar System, you command the spaceship Gyrus on its journey to Earth.

You approach each planet in a circular orbit, starting with far-off Neptune. Each planet is the host to a horde of aliens eager to get out of the confines of their atmosphere to launch an attack against you.

Extraneous, Parasites, Terrorists and Gigantees make up the alien fleets and your job is to attack them while they are still a distant blur in the distance.

An eight-way joystick and marvellous stereo background

music help to lift this space game out of the ordinary. There are 22 stages as from Neptune you fly to Uranus, Saturn, Jupiter and Mars, on your way back to Earth.

Every four stages, you enter the chaos stage where your craft is invulnerable to the attacks of the Gyruses and Dogmas. A good chance to boost the score.

An additional advantage of the Gyrus game, is that a successful commander can take over his vanquished enemies' fleets and like Tassetti move more than one fleet in formation.

The great finale before a good graphic representation of the Earth.



## E.T. — ARMED AND VERY DANGEROUS!

### KOSMICKROOF'R

The story continues after this new extraterrestrial planet home in Round Earth!

In this video game, your mission is to guide Kroof'r back to his own galaxy light years away. The ugly little devil has far worse than FBI agents and scientists on his trail too.

The journey is beset with problems and obstacles are thrown up by the evil aliens who are out to get Kroof'r.

Luckily he is well-equipped with lasers and he can fire back. When the enemy gets too close, you have to look for the smart bomb button or the energy shield.

The smart bomb turns green and that's your signal to smash it. As you wander homewards between the planets, it is sometimes necessary to stop in to the intergalactic garage and try to buy up a few spares to get a decent space craft together.

A few items like a fuel tank, a box of bullets or a motor and Kroof'r could soon have a ship worthy of another fleet.

Eventually the wilderness comes onto the screen and when one of the three entry ports lights up Kroof'r can be guided into the intended beam.

But take care, a slip on the timing here and its back to Earth and another handful of 5 pence.





# ANIROG

# SOFTWARE

## XENO II

An 8 STAGED C screen presentation with superb alien powered space thruster action strategy in machine code with four action packed stages. To defeat the space conqueror XENO II you have to fight off swarms of alien craft, plasma lightning, the rages of the outer nebulae and finally attack the power source protected by a force field, programmed to counteract by quaterns and most taxing by wit, winning suicide space ships. This is a game for all gamers.

15 VIC 20 100 £13.00

## CAVERN FIGHTER

AN 8 C VERSION OF SCRAMBLE. Layers, bombs, continuous scoring and special effects give all the thrills of arcade games. From your space ship through the hazardous tunnels and caverns, destroying enemy monsters, machines, submarines and submarines for rewards. Four stages to complete mission. 10 level levels.

18-15 VIC 20 100 £13.00

## CRAWLER

THE 8 C VERSION OF CATERPILLAR. Fighting spiders, madman, flying bear and multi-directional insect makes this game fast and furious with 10 ball levels.

16 VIC 20 100 £13.00

## PHARAOH'S TOMB

Once you enter, the only way out is with the aid of a key which unlocks the mystery of the Pharaoh's tomb. Beware of the mummies, the ancient Egyptians in painstakingly built. One hour more and you will beat the same fate as some other folk, unless you manage to escape. A multi-screen top graphical adventure with 8 C graphics.

18 VIC 20 100 £13.00

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Hi-res games for the whole family. Board game Chess plus Roman, Taisen, Boulder Ball, Lunar Soccer, Memory and Snare.

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Another seven games pack for the 8 C. The Great Crystal Adventure, Goban, Gps, the Great Devil, Ghats, Grand Prix, Breakout, Copy and Minimals.

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## KRAZY KONG

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18-15 VIC 20 100 £13.00

## SLAP DAB

AN exciting game based on the arcade game PAPER DOL which combines fast action with strategy. Giant insects hiding under the red panel surface are released by your giant hand. You require fast action and quick thinking to capture them and knock the panel. The game is 100 percent machine code and Hi-Res graphics also includes Hi-Res and running code with brilliant sound effects.

18-15 VIC 20 100 £13.00

## DOTMAN

Who's afraid you're too fat to eat dots and capture points. You can turn the tables on them by eating the pits. Don't forget the ghosts have been given intelligence and will try to corner you. This feature makes Dotman exciting and challenging. 8 C 8 C game complete with running and high-res scenes and music.

18-15 VIC 20 100 £13.00

## ZOK'S KINGDOM

Your character has been damaged in a meteor storm & has been washed ashore on the planet ruled by ZOK, a time space generated shape of blue air. You are challenged to gather all the lost emeralds as the battle for control starts in earnest in this top multi-screen graphical adventure in vivid graphics and 8 C sound.

18-15 VIC 20 100 £13.00

18-15 VIC 20 100 £13.00

## GALACTIC ABDUCTORS

A thrilling action-packed game which uses all of your TV screen for the superb large animated graphics. Great Space-Hawks and alien invasion invade patterns as they drop their deadly bombs! Mines which will destroy your base or combat. Before you are being deflected yourself, the Aliens will feature your biggest population, returning only their shells. 8 C 8 C game complete with high score table that will test your mind with its graphics and sound effects.

18 VIC 20 100 £13.00

## FROGRUN

Popular arcade game. All machine code with brilliant action graphics and sound effects. Features include: instant graphics, fast frog, funny, fast, funny and fast.

18-15 VIC 20 100 £13.00  
18-15 SPECTRUM 100/100 £13.00  
18-15 COMMODORE 64 £13.00

## ORACULA

Count Oracula is using computers to his credit. He uses all night and you must find his weaknesses in a maze through the forest before he does. A multi-screen graphical adventure.

18 VIC 20 100 £13.00

## TINY TOT'S SEVEN

Super games pack for younger children with bright colour graphics and sound effects. Includes: Snake, Boulder Ball, Super Frog, Dr and Dr, World Soccer, Boulder Chuck, Snake and Mad Snake.

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## 3D TIME TREK

It's not a 3D game for the 8 C! Although badly sounded, you are determined to save and destroy the invading space probes who must now disappear outside the galaxy in search of help only. A brilliant strategy game with a difference - spectacular 3D graphics and real-time action.

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The tortuous paths and turns of this 2D maze will intrigue even the most jaded Pacman player! You'll find yourself within the walls of a graphically stunning maze — even more baffling than the one at Hampton Court. But before you start to wander — there are important starting corridors and deadly pits which must be avoided at all costs during your quest for the way out. To help you get out there is a map located somewhere in the outer corridors. Once you have found that all you have to do is avoid the lurking monsters and find ladders to help you deal with the tricky obstacles and the transporter rooms, located pit! An added attraction are the transporter rooms, located behind a set of sliding doors, which you'll find dotted around the maze. These transporters will help take you to different parts of the maze — but offer no real chance of escape! If you see a pair of ladders on your journey through the corridors, pick them up. You'll need them to cross the pits. If you fall into one of these holes in the maze floor the game ends. Ladders unfortunately cannot be transported — so you'll have to drop them if you want to enter a transporter room. Monsters in the maze are extremely intelligent beings and will follow you — the best tactic is to cut away! If you suddenly vanish in an apparent corner a monster has leaped on you from behind!

The map is the key to your freedom. It is represented by a block square and is located in one of the outer corridors. If you find it pick it up using the fire button on your joystick and then press "M" on the keyboard. You will see a plan view of the maze and the all-important transporter beam which will take you to freedom. This is marked by a cross. The map also shows your position and the direction you are facing. You must use the information to work out the best route out of the maze. There are four skill levels — if you manage to escape the first time count!

```

10 GRAPHICS 0:POKE 752,1:CLR 1:RESTORE 0
2:COLOR 3,0,0:POSITION 13,11:7 "SHELL LE
VEL " : INPUT LEA:IF LEVA=0 THEN 10
30 POSITION 12,11:7 " ROAD ONT "
40 DIM M(10,10):DIM J(11):DIM K(10):DIM L(
41):DIM Z(14):DIM T(14):DIM W(11):DIM M(1
10):DIM P(14)
42 M(0,0) " B L C T " : P(0,0) " R S M " : Z(0,0) " L A S I C H
" : L(0,0) " P " : W(0,0) "
50 FOR Q=0 TO 10:READ I:M:O:C:1:NEXT Q
C=C+1:IF C=10 THEN 70
60 GOTO 50
70 FOR Q=1 TO 4:READ A,B,C,D:Z(Q)=M(C):B
L(Q)=C:NEXT Q
80 W=INT (RND*(100)/2+1):IF W=1 THEN M(1,1
1)=P:M(1,14)=C:GOTO 100
90 M(0,1)=B:M(1,14)=C
100 W=INT (RND*(100)/2+1):IF W=1 THEN M(0,0)
B 130
110 B=4:FOR A=1 TO LEV+2:G:G:G:G 130:NEE
T A
120 C=0:GOTO 150
130 W=INT (RND*(100)/2+1):IF W=1 THEN M(0,0)=C+1
:IF C=9 AND Y=4 OR M(0,1)=C THEN 150
140 IF M(0,1)=Y+4 OR M(0,1)=Y+4 OR M(1,1)=
Y+4 OR M(1,1)=Y+4 THEN 130
150 M(1,1)=0:RETURN
160 FOR B=1 TO LEV
170 W=INT (RND*(100)/2+1):IF W=1 THEN M(0,0)=Y+
4:IF M(1,1)=C THEN 160
180 GRAPHICS 0:POKE 752,1:SETCOLOR 1,0,0
:SETCOLOR 2,LEV+3,14:SETCOLOR 3,LEV+3,14
17 " LADDER MAZE BY P. R. JOHNSON"
200 B=0:Y=11:G:G:G:G:G:G:G:G:G:G:G:G:G:G
210 B=0:FOR Y=7:Y=11:DO:G:POKE 77,0:POKE
744,255:IF B=1 THEN G:G:G:G:Y=Y+1:G:G
220 FOR A=1 TO R:READ U,V,W,Z,0,P:NEXT A
230 G:Z(0)=0:G:Z(0)=0:P=0
240 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
250 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
260 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
270 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
280 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
290 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
300 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
310 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
320 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
330 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
340 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
350 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
360 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
370 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
380 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
390 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
400 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
410 G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
420 GRAPHICS 0:16:SETCOLOR 0,LEV+3,14:SE

```

# LADDER MAZE

Movement is carried out entirely by the joystick. The fire button is used to open doors and pick up items.

The key to the Map is at bottom. B = door. Fire transporter. L = ladder. GOTO = go to a screen.

The random number generator in line 140 determines whether or not the transporters move or not and the monster is set to a 50% chance. But it can be lowered or increased to make the game more or less challenging. No matter what skill level you will always be able to reach a pair of ladders or a transporter when first starting.

```

320 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
330 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
340 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
350 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
360 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
370 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
380 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
390 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
400 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
410 G=0:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G:G
420 GRAPHICS 0:16:SETCOLOR 0,LEV+3,14:SE

```





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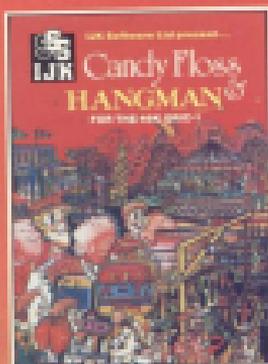


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BY PHILIP HINTON

## RUNS ON A TEXAS TI 99/4a IN 5K

Watch out — there's a snake in the grass! And this one is after all those juicy windfalls from the fruit trees in your orchard.

Take charge of this slippery customer as he winds his way

# MUNCHER

around the rocks and trees, picking up tasty fruits on the way. There are four kinds to munch — apples, oranges, bananas and cherries. When one orchard is cleared of fruits your snake moves onto another more difficult screen. The rocks and trees in each orchard must be avoided. If the snake hits one he loses one of his ten lives. Around the edge of the orchard is a hedge which must be avoided. If the snake hits it the game is over. How many forbidden fruits can you collect?

```
10 GOSUB 2170
20 TREES=20
30 WROCKS=10
40 NFRUIT=10
50 CALL SCREEN(4)
60 Q=32
70 SC=0
80 LIV=10
90 SHEET=1
100 RANDOMIZE
110 J=0
120 F=1
125 REM CHOOSE A FRUIT
130 PRINT ((4)*RND+1)+0+121
135 REM DEFINE GRAPHICS
140 CALL CHR(104)+"FFFFJF1F1F337
3FF")
150 CALL CHR(105)+"FFFFFF9F9FFFC
381")
160 CALL CHR(106)+"B1C3E7FF9F9FF
9FF")
```



170 CALL CHAR(107,"FFC0C0FF6F8F0F  
 EFF")  
 180 CALL CHAR(109,"19183C7EFFFF7  
 67E")  
 190 CALL CHAR(145,"0844069303060  
 488")  
 200 CALL CHAR(153,"3C7EFFFFFFF7F  
 F7E")  
 210 CALL CHAR(137,"19182442E6F7F  
 762")  
 220 CALL CHAR(129,"39087EFFFFFFF  
 F7E")  
 230 CALL CHAR(112,"A05A055A055A  
 A05")  
 240 CALL CHAR(96,"397CFEFFFF7078  
 3")  
 250 CALL CHAR(97,"55A05A05A05A  
 5A")  
 260 CALL CHAR(120,"78FCFEFEFE7C3  
 8")  
 270 CALL HCHAR(1,1,32,760)  
 280 A=12  
 290 B=4  
 300 D=1  
 310 P=0

320 FRT=1  
 330 CHAR=105  
 340 CALL COLOR(10,14,1)  
 350 CALL COLOR(11,14,1)  
 360 CALL COLOR(12,7,1)  
 370 CALL COLOR(14,9,1)  
 380 CALL COLOR(15,12,1)  
 390 CALL COLOR(16,10,1)  
 400 CALL COLOR(19,13,1)  
 410 CALL COLOR(12,8,1)  
 420 CALL COLOR(2,3,3)  
 430 CALL HCHAR(3,3,97,20)  
 440 CALL VCHAR(3,3,97,20)  
 450 CALL HCHAR(22,3,97,20)  
 460 CALL VCHAR(22,3,97,20)  
 470 A\$="SECRET" \*STR\$(ASC)  
 480 Z=2  
 490 RT=3  
 500 GOSUB 2020  
 510 CALL HCHAR(2,16,108,LT)  
 520 A\$="GARDEN" \*STR\$(SHEET)  
 530 Z=23  
 540 RT=3  
 550 GOSUB 2020



# FROM RUSSIA WITH LUCK



by Jess  
Frost



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**JABBERWOCKY**

```

560 CALL HCHAR(23,14,FR,NFRUI)
565 REM PLACE TREES,ROCKS AND F
FRUITS ON THE SCREEN
570 FOR YT=1 TO TREES
580 RD=INT((18)*RND)+4
590 RD=INT((24)*RND)+6
600 CALL HCHAR(RD,3D,96)
610 NEXT YT
620 FOR RDC=1 TO MROCKS
630 ROCK=INT((18)*RND)+4
640 ROCK2=INT((24)*RND)+6
650 CALL GCHAR(ROCK,ROCK2,RD)
660 IF RD<32 THEN 630
670 CALL HCHAR(ROCK,ROCK2,120)
680 NEXT RDC
690 FOR K=1 TO NFRUI
700 E=INT((18)*RND)+4
710 R=INT((24)*RND)+6
720 CALL GCHAR(E,R,RFL)
730 IF RFL<32 THEN 700
740 CALL HCHAR(E,R,RD)
750 NEXT K
755 REM MAIN LOOP
760 CALL HCHAR(A,B,CHAR)
770 CALL HCHAR(A-F,B-J,112)
780 IF Q<32 THEN 1230
790 CALL KEY(C,X,Y)
800 IF Y=0 THEN 1170
810 IF X=83 THEN 850
820 IF X=68 THEN 930
830 IF X=69 THEN 1010
840 IF X=89 THEN 1090 ELSE 760
850 B=B-1
860 F=0
870 J=1
880 P=-1
890 Q=0
900 CHAR=104
910 CALL GCHAR(A,B,Q)
920 GOTO 760
930 B=B+1
940 F=0
950 J=1
960 P=-1
970 Q=0
980 CHAR=107
990 CALL GCHAR(A,B,Q)
1000 GOTO 760
1010 A=A-1
1020 P=-1
1030 J=0
1040 P=0
1050 Q=-1
1060 CHAR=106
1070 CALL GCHAR(A,B,Q)
1080 GOTO 760
1090 A=A+1
1100 F=1

```

```

1110 J=0
1120 P=0
1130 Q=1
1140 CHAR=105
1150 CALL GCHAR(A,B,Q)
1160 GOTO 760
1170 B=B+P
1180 A=A+Q
1190 CALL GCHAR(A,B,Q)
1200 IF Q<32 THEN 1210 ELSE 760
1210 CALL HCHAR(A,B,CHAR)
1220 CALL HCHAR(A-F,B-J,112)
1230 IF (Q=96)+(Q=112)+(Q=120) TH
EN 1260
1240 IF (Q=129)+(Q=137)+(Q=145)+
(Q=153) THEN 1360
1250 IF Q=97 THEN 2060
1255 REM CRASH ROUTINE
1260 FOR SDU=560 TO 480 STEP -1
1270 CALL SOUND(-100,SDU,VP)
1280 NEXT SDU
1290 CALL SOUND(1000,110,30,110,
30,500,30,-8,0)
1300 FOR NU=1 TO 10
1310 CALL COLOR(10,16,1)
1320 CALL COLOR(10,14,1)
1330 NEXT NU
1340 LIV=LIV-1
1350 GOTO 1760
1355 REM ATE FRUIT
1360 CALL SOUND(500,500,0,800,5,
300,10)
1370 SC=SC+100
1380 FRUIT=FRUIT+1
1390 Q=32
1400 CALL HCHAR(23,14,32,NFRUI-F
RUI+2)
1410 CALL HCHAR(23,14,FR,NFRUI-F
RUI+1)
1420 AS=STR$(SC)
1430 Z=2
1440 RT=9
1450 GOSUB 2020
1460 IF FRUI=NFRUI+1 THEN 1470 E
LSE 760
1465 REM GARDEN CLEARED OF FRU
ITS
1470 CALL SOUND(100,110,0,220,0,
300,0)
1480 CALL SOUND(100,440,0,950,0,
660,0)
1490 CALL SOUND(100,800,0,680,0,
950,0)
1500 CALL SOUND(400,1000,0,1100,
0,1200,0)
1510 AS="CONGRATULATIONS!"
1520 Z=10
1530 RT=7
1540 GOSUB 2020

```

```

1550 AS="GARDEN "&STR$(SHEET+5)
COMPLETED"
1560 Z=11
1570 RT=6
1580 GOSUB 2020
1590 AS="BONUS "&STR$(SHEET+LIV+
100)
1600 Z=12
1610 RT=10
1620 GOSUB 2020
1630 SC=SC+(SHEET+LIV+100)
1640 AS=STR$(SC)
1650 Z=2
1660 RT=9
1670 GOSUB 2020
1680 SHEET=SHEET+1
1690 IF NFRUIT=16 THEN 1710
1700 NFRUIT=9+SHEET
1710 TREES=TREES+1
1720 NRocks=NRocks+1
1730 FOR WAIT=1 TO 300
1740 NEXT WAIT
1750 GOTO 100
1755 REM LOST LIFE
1760 CALL HCHAR(2,16,32,LIV+20)
1770 IF LIV<1 THEN 1860
1780 CALL HCHAR(2,16,100,LIV)
1790 D=0
1800 P=0
1810 Q=32
1820 CALL HCHAR(A,B,CHAR)
1830 CALL HCHAR(A-F,B-J,112)
1840 CALL KEY(D,KU,YU)
1850 IF YU=0 THEN 1840 ELSE 760
1855 REM GAME OVER
1860 FOR SOUND=150 TO 110 STEP -1
1870 CALL SOUND(100, SOUND, 0)
1880 NEXT SOUND
1890 AS="GAME OVER"
1900 Z=10
1910 RT=10
1920 GOSUB 2020
1930 AS="SCORE:"&STR$(SC)
1940 Z=11
1950 RT=11
1960 GOSUB 2020
1970 PRINT "ANOTHER GAME?"
1980 CALL KEY(D,K,S)
1990 IF K=89 THEN 20
2000 IF K=78 THEN 2010 ELSE 1980
2010 END
2020 FOR KL=1 TO LEN(AS)
2030 CALL HCHAR(2,RT+KL,ASC(LEFT
(AS,KL),1))
2040 NEXT KL
2050 RETURN
2055 REM RAN INTO HEDGE
2060 FOR VOLU=30 TO 0 STEP -1
2070 CALL SOUND(-250,-2,VOLU)
2080 NEXT VOLU
2090 FOR VOLU=0 TO 30
2100 CALL SOUND(-500,-2,VOLU)

```

```

2110 NEXT VOLU
2120 AS="YOU WENT OUT OF THE GAR
DEN"
2130 Z=9
2140 RT=3
2150 GOSUB 2020
2160 GOTO 1890
2165 REM INSTRUCTIONS
2170 CALL CLEAR
2180 CALL SCREEN(16)
2190 PRINT " HUNCHER

2200 PRINT " THE OBJECT OF THE
"GAME IS" TO CONTROL A SNAKE WHI
CH IS" "MOVING AROUND A GARDEN."
2210 PRINT "THE SNAKE IS GROWING
"ALL THE" TIME."
2220 PRINT " YOU MUST MAKE THE
SNAKE" "RUN INTO THE FRUITS WHIC
H" "HAVE FALLEN ONTO THE GROUND.
"
2230 PRINT "BUT BEWARE,THERE ARE
"TREES" "IN THE GARDEN AND ROCKS
" "LYING AROUND."
2240 PRINT "IF YOUR SNAKE RUNS I
NTO" "EITHER OF THESE,ANOTHER"
2250 PRINT "TAKES ITS PLACE UNTI
L ALL" "TEN SNAKES HAVE BEEN USE
D."
2260 PRINT " IF YOU EAT ALL THE
"FRUITS" "IN A GARDEN YOU ARE MO
VED" "TO ANOTHER ONE."
2270 GOSUB 2020
2280 CALL CLEAR
2290 PRINT "AT THE END OF EACH G
ARDEN" "YOU ARE GIVEN A BONUS WH
ICH" "IS ADDED TO YOUR SCORE."
2300 PRINT "YOUR SCORE,SNAKES RE
MAINING" "GARDEN AND FRUITS" "RE
MAINING ARE SHOWN ON THE" "SCREE
N."
2310 PRINT "WATCH OUT FOR YOUR T
RAIL AS" "A SNAKE IS LOST IF IT
" "COLLIDES INTO THE ITS TRAIL."
2320 PRINT "ALSO BEWARE OF THE S
IDE OF" "THE GARDEN,IF YOU RUN I
NTO" "IT YOU HAVE LEFT THE GARDE
N"
2330 PRINT "AND YOUR GAME IS OVE
R."
2340 PRINT "ENSURE THE ALPHA LOC
K KEY" "IS IN THE 'ON' POSITION."
2345 PRINT "USE THE CURSOR KEYS<
E,D,K,S" " TO CONTROL YOUR SNAKE
"
2350 PRINT "PRESS ANY KEY TO CO
NTINUE"
2360 CALL KEY(D,K,S)
2370 IF S=0 THEN 2360 ELSE 2380
2380 RETURN

```

# sinclair special

1



**Inside...**

**Latest prices round-up...**

**Latest software...**

**Order form...**

## Introduction

One thing's certain about the Sinclair world - there's never a dull moment.

Every month sees new software and new hardware, produced by Sinclair enthusiasts, or produced by Sinclair itself.

The magazines do a fantastic job of keeping you up to date with the input of enthusiasts. We want to keep you in touch with Sinclair's own developments.

Every month, there'll be a Sinclair Special in this magazine.

Sometimes, inevitably, there won't be anything new to say - we want to break away from the breathless announcements of hardware and software you just can't buy.

But when something new is available, we want you to have accurate information - fast. You'll find it here.

This month, we're giving you the latest information on the recommended retail prices of Sinclair equipment. They're our prices, and you may well find things cheaper (or dearer) in the shops. If they're cheaper - terrific! Snap them up. Note, however, that from us the ZX81 is down to £29.95.

We're also announcing six superb new Sinclair essentials for the Spectrum, and three more which make full use of the ZX81. There's an order form at the back of this Special.

Next month... but there, next month is another story! Watch (as they say) this space.

*Nigel Searle*

Nigel Searle  
Managing Director  
Sinclair Research Ltd.



# Spectrum - latest recommended retail prices.



**16K was £125.00**  
**16K now £99.95**

**48K was £175.00**  
**48K now £129.95**

**ZX Printer was £59.95**  
**ZX81 was £49.95**

**ZX Printer now £39.95**  
**ZX81 now £39.95**



## Six new ways to make more of your Spectrum.

Take a look at these brand-new titles. Each is an outstanding new program using the full potential of the Spectrum, for games with stunningly animated graphics, for strategies of frenetic cunning, for masterly applications of computing capability...

**Cyrus Is Chess** Based on the Cyrus Program, which won the 2nd European Microcomputer Chess Championship and founded the previously unbeaten Gray Blitz machine. With 8 playing levels, color piece movement, replay and 'take-back' facilities, plus two-player option. The 48K version has many additional features including an extensive library of chess openings. For 16K or 48K RAM Spectrum.

**Horace and the Spiders** Make your wily wif Horace to the House of Spiders, armed only with a limited supply of anti-spider bite serum. In the house, destroy the webs before the spiders can repair them. Then destroy the spiders, before they destroy Horace! Undoubtedly the greatest Horace program ever produced! For 16K or 48K RAM Spectrum.

**Computer Scrabble** The famous board game, on-screen - with the whole board on view! A huge vocabulary of over 11,000 words. Full-size letter tiles, four skill levels - the highest of which is virtually unbeatable. For 1 to 4 players. For 48K RAM Spectrum.  
©1984 by Overleaf and copyright owned by Sinclair Computers and Hardware Group - a D. I. Group and IBM PLC subsidiary.

**Backgammon** A fast, exciting program, with traditional board display, rolling dice and doubling cubes. Four skill levels. For experts - or beginners. (Rules are included - it's the quickest way to learn the game.) For 16K or 48K RAM Spectrum.

**FORTH** Learn a new programming language, as simple as BASIC, but with the speed of machine code. Complete with Editor and User manual. For 48K RAM Spectrum.

**Small Business Accounts** Speeds and simplifies accounting work, produces Balance Sheets, Profit and Loss information and VAT returns. Complete with User manual. For 48K RAM Spectrum.

**Overleaf - your Sinclair order form.**

# Three new ways to get the best out of your ZX81.

The range of Sinclair software for the ZX81 continues to grow.

These three new cassettes offer two totally different challenges to you and your ZX81. The games - like so many ZX81 games today - really use the ZX81's capability. The FORTH program is a fascinating extension of your own computer understanding.

**Sabotage** Defender or attacker? The choice is yours in this exciting game.

Be the Guardian and defend the randomly placed bases of ammunition inside the compound - or be the Saboteur and attack the ammunition!

Written by Macronics for a ZX81 with 16K RAM. Cassette price: £4.95.

**City Patrol** You are the Commander of a laser firing ship. Your task is to intercept and destroy alien suicide ships descending on your city. Judge your rating as Commander by how many aliens you destroy and how much of your city survives.

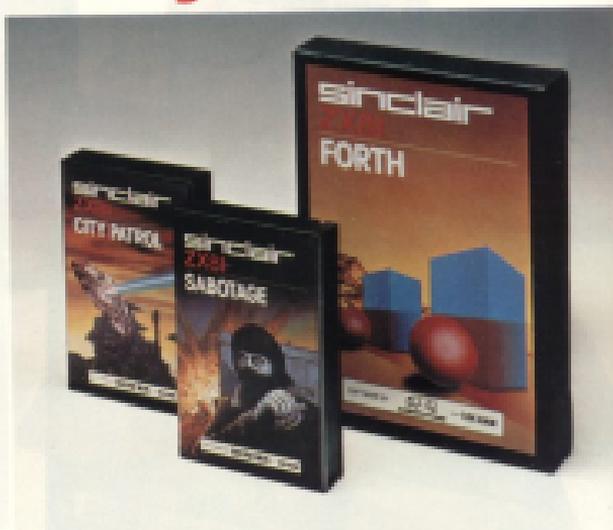
Written by Macronics for a ZX81 with 16K RAM. Cassette price: £4.95.

**FORTH** Discover a new programming language which combines the simplicity of BASIC with the speed of machine code.

FORTH's compiled code occupies less than a quarter of the equivalent BASIC program and runs ten times as fast. It is fully extensible by the addition of user-defined commands.

Free User-Manual and Editor Manual with each cassette.

Written by Artic for a ZX81 with 16K RAM. Cassette price: £4.95.



## How to order

Simply fill in the relevant section(s) on the order form below. Note that there is no postage or packing payable on Section B. Please allow 28 days for delivery. Orders may be sent FREEPOST (no stamp required). Credit card holders may order by phone, calling 01-200-0200 24 hours a day. 14-day money back option.

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Telephone: (0275) 606311.

To: Sinclair Research Ltd, FREEPOST, Camberley, Surrey, GU15 3PS

### Section A: hardware purchases

Qty	Item	Code	Item Price £	Total £
	ZX Spectrum - 48K	0000	120.00	
	ZX Spectrum - 16K	0001	90.00	
	ZX1 (including 1 1/4 Mega Adapter)	1000	10.00	
	16K Floppydisk for ZX81	1010	10.00	
	ZX Printer	1014	39.95	
	1 1/4 Mega Adapter for use with ZX81 computer (ZX Printer connection ports required if you have an early ZX81 with 1/4 Adapter)	1002	7.95	
	Printer paper (pack of 500)	0008	11.95	
	Postage and packing orders under £20	0009	3.00	
	orders over £20	0009	4.00	
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\*Please charge to my Access/Bankcard/Postcard account (02)

\*Debit/credit as appropriate

(Please print)

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Address \_\_\_\_\_

(X 25, 28)

### ORDER FORM

### Section B: software purchases

Qty	Cassette	Code	Item Price £	Total £
<b>FOR SPECTRUM</b>				
	0000 Backgammon	4001	5.95	
	0000 Your 10 Chess	4002	5.95	
	0000 Formula & the Sports	4003	5.95	
	0000 Football	4004	10.95	
	01 15 FORTH	4005	14.95	
	00 15 Small Business Accounts	4006	12.95	
<b>FOR ZX81</b>				
	0000 Sabotage	3104	4.95	
	0000 City Patrol	3103	4.95	
	01 FORTH	3000	14.95	
<b>TOTAL £</b>				

# AGF PROGRAMMABLE JOYSTICK INTERFACE

for  
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- Video Graffiti demonstration program which is written totally in BASIC to illustrate how all eight directions and fire can be used. This is also a useful high resolution drawing program.
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QTY	ITEM	ITEM PRICE	TOTAL
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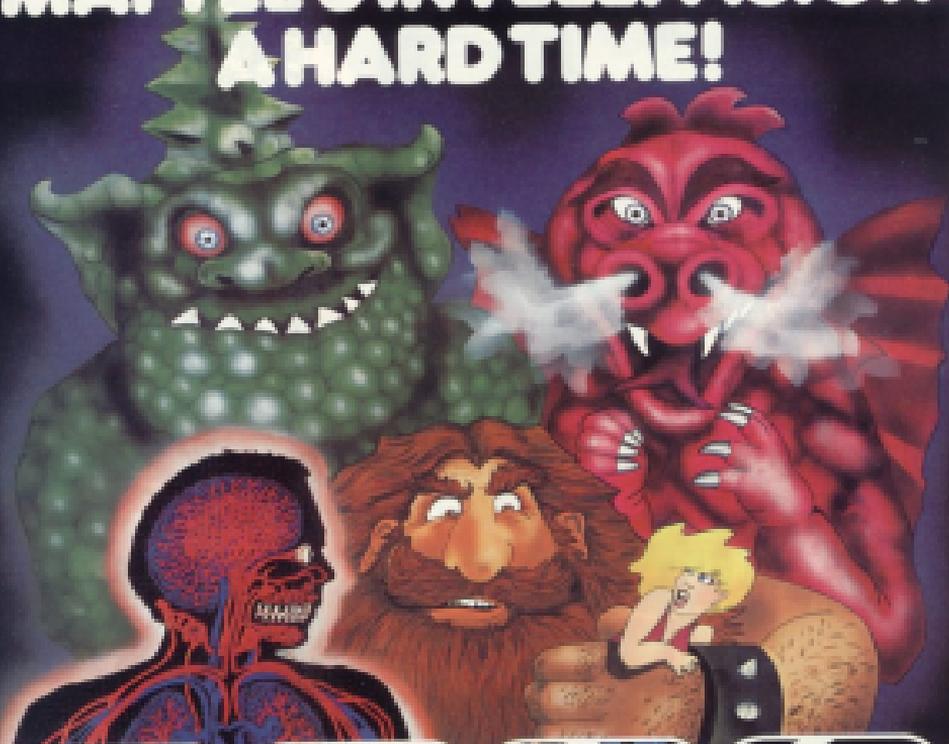








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# GREAT SOFTWARE

## DISASTERS

Cheques cashed and programs not delivered seems to be the biggest problem area in the home computer industry's reputation. The second of our Great Software Disaster columns wrote itself after a deluge of letters about disappointed youngsters who had waited months for a cassette which was still to arrive. We've printed a small cross section of the letters below and phoned up several software companies to find out why delays may occur, how long it is reasonable to wait before assuming that something has gone wrong and how to go about complaining.

### LOST A SNATCHA

Our advance in March, having saved up all my money to splash out on a program for my Vic-20, I wrote to Imagine Software requesting a *Catcha Snatcha* for \$9.95.

I waited for three days for it to come, the date by which their advert claimed I would have it. Living in London, I couldn't go to Liverpool to complain and I was at school whenever I might have been able to phone.

Christopher Morgan,  
Chatter Place,  
London SW7

Imagine's office of *Imagine* name looks positively in this one. "We're new here and we're delays. And we do have a complete procedure for dealing with customers who are suffering from postal delays.

"Part of the problem is the post was that magazines need copy for adverts a long time before the issues actually come out. We would book the advert at the same time we started work on the game so we could have it ready at the same time the magazine hit the streets. But to do this, meant there could not be the slightest delay in production.

"Now there are no problems in bringing us we have all our latest titles in stock before we launch them. Our claim of 48 hour delivery time is definitely now in action."

On Imagine's behalf, I would like to add, Christopher, that C&PD phoned their office at 5.45pm, so don't be afraid to phone when you come home from school.

### CLUB LETDOWN

In February this year my son joined, through your magazine, the Micro-computer Software Club and, shortly afterwards, he received the newsletter advertising various cassettes.

He decided to purchase the game tape *Cell*, completed the form and posted it with a cheque for the correct amount. The cheque has been cashed

but no black marks against Quikmail's mail-order department so we decided to ask how they keep their customers happy.

Mark Tison of Quikmail's production department explained: "We aim to turn around a cassette in seven days between receiving the order and the game actually landing on the customer's mat.

"We do have our problems though and, like most software houses, we are in the hands of the tape duplicating companies and sometimes hold-ups do occur. The reason being that when stocks run down we order new copies, say 5,000 tapes, and we occasionally have to wait a long time — in extreme cases as long as a month."

Legally mail-order customers are not an secure ground. The Office of Fair Trading spokeswoman, Lindsay Keith said: "The biggest problem with mail order is that people are asked to pay in advance. The company can go bust. They may not send off your goods or they may send faulty goods.

"The Advertising Standards Authority lays down 28 days for delivery of mail order goods but it helps to know as much about the company you're dealing with as possible before ordering from them.

"There is nothing to stop a company from cashing a cheque as soon as it arrives even if the goods have been held up."

But as of late May, the tape had still not arrived.

Would you please investigate and let me know why the tape has not been sent.

A. R. Cantline,  
Selsphynan,  
Glasgow.

John Burnett of Microcomputer Software Club replies: "We usually promise a 24 hour turn-around on receiving an order. The club keeps an

average 50-100 tapes of each title in stock and this is put up to 3-500 on the biggest titles.

"Occasionally when a manufacturer is having production problems, club members can wait as long as a week. But this is rare and the reason for using the club rather than going direct to the manufacturer is the fast reliable turn-around.

"Our policy on complaints of non-delivery, or the occasional bad order, is to send it out again and ask the purchaser to send one tape back if new arrives."

He added that Mr Cantline need only write to the club or phone membership secretary Mrs King on Oxford 330275 and a new tape will be despatched.

### ANGRY ADVENTURER

For seven months now I have been waiting for five games from C.P.S. Limited which were advertised as follows: *The Fourth Kind*, *The Doomed City*, *Wizard of Shaz*, *The Ghost of Babylon* and *Conquest*.

I sent for these on November 9th 1980 and included a cheque for £47.50 and after repeated phone calls and numerous letters, I still have not received the games, or any money back. I understand that C.P.S. now call themselves Chamelion Computer Games.

D. E. Drobman,  
Masthope,  
Middlesbrough

Let us put you right on one point Mr Drobman. Chamelion Computer Games are not the same company as C.P.S. Chamelion did have an agreement to market three C.P.S. games, but have since withdrawn that agreement and imposed royalties to C.P.S.

Great Software Disasters is our watchdog on the industry. If there's anything which has angered you, software, hardware or computer company, please write in and tell us and we'll look into it and publish your views.

We only insist that companies must be given a chance to answer their critics before we publish. Write to: Great Software Disasters, Computer & Video Games, Durrant House, Herbet Hill, London EC1W 5UB.

**PAGE** 

An ATARI™ Users Magazine

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Welcome to Arcade Arena where you have the chance to prove yourself the fastest hand on the Spectrum, Oric, or whatever, keyboard.

This issue sees four games listings for the Atari, Spectrum, Sharp and Vic-20. Next issue we've commissioned another four for different machines.

Each is a special arcade game which will test your co-ordination to the limit. But if you're under 16 and think you can take on all-comers at the game and end up with a top score, then we want to hear from you.

Put up the highest score you can on the machine and get one of your parents or a teacher at school to witness the score and fill in the form on page 82.

Score duly recorded and signed by your willing witness send it into us at C&VG before September 16th. The top three on each game will be invited to a final to further test their skills, at the Brainwave Computer Exhibition in November.

# BALLOONACY

```
100 DEF AN(ASAP),BN(10),C(7),PN(10),DV(7)
101 DEF LN(10),MN(10),ON(10),SC(7)
110 RT=44:AT=0:PFOR= 100,0:GPP=POCS 10
114 POKL 704,56:PFOR= 704,704:PFOR 710, 10
2
120 POKL 54779,6:PFOR= 704:PFOR 557,46:PF
130 57777,5:CH=PFOR+1074
140 VTR=PFOR(1540)+PFOR(1521)+256
144 ASAP=PFOR(1540)+PFOR(1541)+256
150 CRT=PFOR(204)-AT:ASAP=INT(DPPS/256)*L
D=PPS-D+256
160 POKL VTR=2,L(1):PFOR VTR=3,H
170 FOR J=1 TO 10:READ AN(0)J,J1=CH+ON
NEXT J
171 DATA 0,43,42,42,39,39,35,32,31,0
180 AN(1)=77:ON(1)=97:PN(1)=99
185 FOR J=275 TO 222:READ AN(1)J,J1=CH+
ON(1)NEXT J
190 DATA 0,29,29,75,42,29,29,29
195 COL=ON(10)+50000 10000:PFOR= 240
210 POKL(104)0,317 86174 a 17:PFOR(104)
0,11:7 86174"BALLOONACY"
250 FOR J=0 TO 511:PFOR CH=J,PFOR(107)44
171:NEXT J:PFOR 704,RT=4
260 FOR J=204 TO 20:READ AN(POR)CH=J,AN
EXT J
265 DATA 223,223,223,0,251,251,251,0
266 DATA 29,62,62,29,29,29,0,0
```

```
268 PFOR= 104:FOR J=49 TO 47:READ AN(P
KE)CH=J,ANEXT J
270 PFOR= 240:FOR J=2 TO 9:READ AN(1)
J1=CH+ON(1):NEXT J:AN(1),11=CH+ON(1)
275 FOR J=1 TO 10:READ AN(1)J,J1=CH+ON(1)
NEXT J
276 DATA 0,86,169,139,43,1,139,92,32,0
280 FOR J=0 TO 7:READ AN(1)J1=ANEXT J
281 DATA 12,14,0,6,6,0,19,12
290 POKL 1771,64:BL(107)+PFOR(1560)+256:PFOR
(1561)+PFOR(1510)+4,155:PFOR(1040)J=10
30
295 READ AN(1)AC(1) THEN POKL J,AN(1)J1:
NEXT J
297 POKL 512,0:PFOR 512,6:PFOR 54206,170
298 SC=ON(1)J1+512:J1=0:AN(1)=AN(1)J1:PN
(1)=SC:PFOR 704,255:PN(1)=7:100
299 COLOR 20:PLOT 0,11:DRAW(19,11):COLOR
0:PLOT 1,11:PLOT 2,11:PLOT 3,11:PFOR(11)
ON 7,11:7 861616+5
300 FOR J=20 TO 100:PFOR 53246,J1:GOUND 0
,100+7,0,(1)T=TIMEST J:GOUND 0,0,0,0
305 POKL 77,6:PFOR 1790,120:PFOR(177),11
BL=BL-1:LV=LV+1:AN(1)=AN(1)+5:AN(1)F
R=200 T
NEXT J=20
310 PFOR(104)=1000+LV:PFOR(104)=1000+
LV:FOR J=0 TO 7:READ AN(1)J1:ANEXT J:IF 0
L(1) THEN BL=0
320 FOR J=1 TO 5:GOUND 0,0,10,10:FOR R=
1 TO 10:NEXT R:GOUND 0,0,0,0:PFOR LV=1 10
```

## RUNS ON AN ATARI 400/800 IN 16K

BY SIMON GOODWIN

Can you become Top of the Poppers? No, not yet another bunch of pretty musicians. This Popper aims to become number one in the balloon bursting charts! And all you need is a silly hat with a sharp pointed spike on top. What, you haven't got one? Oh well, never mind the Atari user hater will supply you with one as soon as you're keyed in this game.

The idea is to manoeuvre your little man with the spiked hat around at the bottom of the screen, placing him under balloons which drift down from the sky above him. If you miss and a balloon hits the ground you lose one of your three lives. But you can save yourself

by boosting the balloon back into the sky with a well-aimed kick. As long as the balloon is below head height and the little man is near enough then he'll be able to save a life.

Some balloons are tricky and turn into skull and crossbones before reaching the ground — these must be avoided at all costs. To get beyond the first screen you must burst 12 balloons. The second tests you with 14 balloons, the third 16 and so on.

The balloons drop faster on each subsequent screen and more of them drop diagonally instead of vertically. You score for each balloon popped and a bonus is given when you complete a screen. You can freeze the action at any time by pressing any key.

**Program Notes:**  
Line 180. The string assignments are to "CONTROL COMMAND" (the heart shape). The printer prints this as a space.

Line 210. Any mixture of inverse, upper and lower case will do in the title, just to make it attractive.

Line 383. As line 180.

Line 435. As line 180.

Line 530. The word "START" is in inverse.

Line 576. As line 180.

To make it easier to kick a balloon, after line 400 so that the tests on "P" are greater than 4.

To make it easier to pop a balloon, after line 372 so that the tests on "P" are greater than 3.

**Hints on Play:**  
After popping a balloon, immediately return to the centre of the screen. This is critical on the higher levels of play.

It is safe to pass through the skull and crossbones once it has missed your head; but don't kick it. Don't panic trying to get exactly lined up. It is often easier to accept that you are off centre for the balloons, and wait and kick it up again, than to keep pulling on the stick trying to move just that little bit.

```

20: NEXT K: NEXT J: IF D<0 THEN D=0
330 A=INT(ABS(D)*40): IF C<0:=-1 THEN C=0
340 IF PEEK(1764)+C>255 THEN SOUND 410
340 GOTO 1764: IF S&D(1)=2: LEVEL THEN C=ABS(D)
350 IF ABS(D)>16: D=16: IF D<0 THEN D=-16
360 IF C=0 AND S=0: OR C=7 AND S=0: OR
EM X=-2
370 G=CV(326-LEVEL/2)+H+H*NC+CV(61)+M+H
117 ABS(D)>16: IS THEN NC=14: M=0: S=0
380 IF G<322 THEN M=322
390 D=D+1: M=0: PORE 709, CV(11)+PORE 1009,
CV(14)+M+22: COLOR 0: PLOT 4+2, C+10
400 D=D+1: PORE 53249, D, ABS(V), V+1: ABS(V)+
1: IF STRS(10)=0 THEN BOOT=1
410 IF V<354 THEN FOR K=1 TO 2: NEXT K: B
DT0 370
420 B=99: PORE 709, NC
430 D=D+1: PORE 53249, D, ABS(V), V+1: ABS(V)+
1: IF STRS(10)=0 THEN BOOT=1
440 IF V<354 THEN FOR K=1 TO 2: NEXT K: B
DT0 370
450 D=1
460 C=1: C=1: C=1: C=1: IF D=1 THEN D=0: S
OUND 420
470 ABS(V)+M+H+1: IF D=0 THEN FOR J=1 TO
2: NEXT J: BOOT=4: GOTO 330
480 PORE 1791, 0: FOR J=0 TO LEVEL: POSITIO
N 0, 5, 7: 841: "GAME": SOUND 0, 150, 16, 15: SC
ROLL: LEVEL+1: H, D=0
490 POSITION 14, 11: 7: 841: FOR K=1 TO 16:
NEXT K: POSITION 0, 0: 7: 841
500 SOUND 0, 0, 0, 0: FOR J=0 TO 16: NEXT
J: IF SC=999 AND S=0 THEN SOUND 0
510 LEVEL=LEVEL+1: COLOR 0: FOR J=0 TO 5: P
LOT 0, 3: DRAWTO 19, 3: NEXT J: SOUND 1000: P
OSITION 0, 11: 7: 841: LEVEL+1: GOTO 390
440 BOOT=3: PORE(1791): IF P<=4 OR P<=4
4 THEN GOTO 370
460 FOR K=12 TO 15: SOUND 1, 100, 10, K: NEXT
K: FOR K=15 TO 6: STEP -5: SOUND 1, 100, 10,
K: NEXT K
480 IF NC=14 THEN 410
490 NC=0: GOTO 370
510 V=2: S=0: ABS(D)=1: IF D<0 THEN D=-
1
512 GOTO 390
520 IF NC=14 THEN 450
521 COLOR 35: PLOT LEVEL, 11
530 PORE 1791, 0: FOR J=15 TO 0: STEP -0.75
: FOR K=2 TO 16: STEP 2: PORE 704, 0: 1: SOUND
0, J+2, 3: NEXT K: NEXT J
540 LEVEL+1: LIVES=1: PORE 704, 50: IF LIVES=0
THEN B=0: GOTO 550
550 ABS(V)+M+H+1: FOR J=0 TO 120: PORE 53
248, J: SOUND 0, 100+J, 8, 15: 7: -1: NEXT J: SOUN
D 0, 0, 0, 0
560 PORE 1791, 120: PORE 1791, 140: RETURN
570 FOR J=0 TO 15: FOR K=1 TO 3: STEP -3: SOUN
D 0, J+1, 14, 15: PORE 709, J+K: NEXT K: NEXT
J: J: SOUND 0, 0, 0, 0: RETURN
580 D=0: S=0: PORE 53249, D, ABS(V), V+1: ABS(V)+
1: IF V<322 THEN FOR K=1 TO 2: NEXT K: BOOT
0: S=0
510 V=1: BOOT=4: GOTO 370
520 RESTORE 390: POSITION 3, 0: 7: 841: PORE
START TO POSITION 0, 7: 7: 841: "play again"

```

```

570 IF PEEK(153277)+C>0 THEN S=0
575 COLOR 35: PLOT 3, 1: DRAWTO
580: PLOT 3
590: DRAWTO 14, 7: FOR J=0 TO 15
: PLOT 0, 3: DRAWTO TO 19, 3: NEXT J
570 PORE 53249, 0, ABS(V), V+0+1
580: H+H: COLOR 35: 0: 1: SOUND 1000: GOTO 270
590 READ A: IF A=1 THEN RESTORE 390: GOTO
390
595 SOUND 0, 0, 0, 15: FOR J=1 TO 22: NEXT J
1000 A: SOUND 0, 0, 10, 10: FOR J=1 TO 22: SOUN
D 17: J: GOTO 570
570 DATA 243, 121, 193, 121, 162, 121, 144, 121
, 136, 121, 144, 121, 162, 121, 193, 121
570 DATA 243, 121, 193, 121, 162, 121, 144, 121
, 136, 121, 144, 121, 162, 121, 193, 121
580 DATA 102, 91, 144, 91, 121, 91, 100, 91, 102
, 91, 100, 91, 121, 91, 144, 91
590 DATA 102, 91, 144, 91, 121, 91, 100, 91, 102
, 91, 100, 91, 121, 91, 144, 91, 1
590 LINE=1: LIVES=1: 1: 1: 1: COLOR 35: PLOT LINE
3, 1: RETURN
610 PORE 1791, 0: FOR J=1 TO 2: NEXT J: PORE
0, 7: 841, 255
620 IF PEEK(1764)+C>255 THEN PORE 1791, 1: P
ORE 704, 255: RETURN
630 FOR J=1 TO 2: NEXT J: J: GOTO 420
640 IF NC=14 THEN 520
650 ABS(V)+M+H+1: SOUND 0, 5, 5, 10: FOR K=1
TO 2: NEXT K: SOUND 0, 0, 0, 0: SC=SC+1: 1: 1:
LEVEL+1
660 POSITION 14, 11: 7: 841: RETURN
670 NC=0: PORE 1070 370
1000 RESTORE: COLOR: FOR J=0 TO 3: PORE 0
CV(12)+H: NEXT J: COLOR=COLOR+10: IF COLOR
R=1000 THEN COLOR=1010
1000 CV(4)+CV(0)+CV(12)+CV(13)+CV(14)+CV(15)
+CV(16)+CV(17)
1000 PORE 709, CV(12)+PORE 709, CV(13)+PORE
710, CV(14)+PORE 711, CV(15)+RETURN
1010 DATA 70, 100, 234, 102
1020 DATA 100, 26, 72, 102
1030 DATA 200, 26, 9, 102
1040 DATA 102, 246, 210, 99
1050 DATA 20, 100, 120, 246
1060 DATA 24, 24, 252, 100
1070 DATA 72, 172, 252, 0, 240, 23, 173, 0, 211,
100, 100, 100, 170, 0, 200, 204, 0, 144, 0, 100, 17
0, 3, 230, 254, 0, 173, 204, 0, 141, 0, 200
1080 DATA 100, 64, -1
1090 FOR J=0 TO 5
1100 COLOR 4: PLOT 4, J
1110 COLOR 5: PLOT 5, J
1120 COLOR 10: PLOT 10, J
1130 COLOR 15: PLOT 15, J
1140 COLOR 20: PLOT 20, J
1150 COLOR 25: PLOT 25, J
1160 COLOR 30: PLOT 30, J: NEXT J: RETURN
1170 RETURN
1180 DATA -1, 5, 0, 5, 0, 5, 0, 5, -1
1190 FOR J=0 TO 4
1200 COLOR 132: PLOT 2, J
1210 COLOR 4: PLOT 4, J
1220 COLOR 5: PLOT 5, J
1230 COLOR 10: PLOT 10, J
1240 COLOR 15: PLOT 15, J
1250 COLOR 20: PLOT 20, J
1260 COLOR 25: PLOT 25, J
1270 COLOR 30: PLOT 30, J: NEXT J: RETURN
1280 DATA 4, 4, 4, 4, 4, 4, 4

```











Can you grab the treasure-filled jars hidden in the attic of the haunted house before a ghostly ghost grabs you?

You control a cat-burlier out to retrieve the jars from their hiding place at the top of the house with many floors. You must find your way up a maze of ladders to the attic — avoiding the ghost which will chase you single-mindedly throughout your mission. You can briefly capture the

ghost by using a snare and luring the phantom onto a snare-preventer into it — but the snares only last a few seconds and the ghost will soon be back on your trail.

Once you reach the jars, you must carry them — one by one — back to your van parked outside the house.

You'll find a hammer on your travels through the house — this can be picked up and used to deal with the skeleton you'll find in the attic. If you run

underneath it holding the hammer you'll score bonus points.

The ghost can reveal the hammer useless by rushing up to it and turning it red. So trap the ghost before it hits the hammer. When all the jars are in your van the next screen is displayed — and you start all over again, but with less time to beat the ghost!

You get three lives to start with and these can be lost if you get caught by the ghost.

#### Variables:

x,y: co-ordinates of man.

x,g: co-ordinates of ghost.

sc: score.

hs: high score.

hp: high-scores initials.

j: number of jars left.

js: jar string (visual indication of jars left).

t: time left.

tl: visual indication of time left.

ml: visual indication of lives left.

u.g.p: general purpose flags.









# THE EMPIRE

## BATTLE REPORTS

Some 33 battles were fought out in the galaxy this month as tribes struggled to claim certain stars for their empire.

Defenders came out on top again but there were some close-run things — notably at **Apal** where **Blasione** and **Amethyst** fleets stormed in against the **Sun** empire defenders.

In the most one-sided conflict, 215 defending **Sun** Empire fleets rounded on fast lane attackers from the **Good** Empire.

There were no positive battle bonuses though as all the attackers took heading losses into war with them.

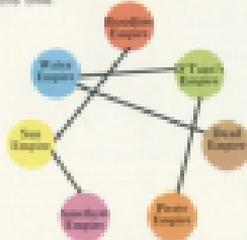
Notes of all the bonuses are included below:

Kingdom defenders suffered a loss of -1. River defenders won but only at the expense of a -1 loss. **Meru** defenders, -1; **Jedig** defenders, -1; **Fuzes** defenders, -1; **Hakab** defenders, -2; **Apal** defenders, -1; **Maden** defenders, 11; **Uak** defenders, -1.

For the first time in Seventh Empire history, the galaxy's diplomats have negotiated no changes on the peace-treaty front. The Diplomatic Diagram seen below is the same as last issue which means that **Sun** Empire defenders could face another hard time in April.

Remember, where there's a rule the two empires are at war for this game turn and no rule means that the two empires are at peace.

The **Real Peace** is once again 8. The imperial ships this turn landed up on the following systems: **Vepoc**, **Yamok**, **Ryvo**, **Samar** and **Elar**. **Amethyst** and **Blasione** empire ships were not placed on the map this time.



The Diplomatic Diagram

<b>POGIZ</b> ○	<b>LABUB</b> +	<b>YEBET</b> +	<b>KOLAP</b> +	<b>ETEL</b> +	<b>FLUNIS</b> +	<b>LULUP</b> +	<b>YAMOK</b> +	<b>KOKKIC</b> ○	<b>IBOK</b> ○
<b>VEZAK</b> ○	<b>QERUN</b> ○	<b>BRJAN</b> ○	<b>JAROB</b> ○	<b>SONNER</b> ○	<b>VEPOC</b> +	<b>QATDIT</b> ○	<b>BLEDD</b> +	<b>AMOL</b> +	<b>MUNER</b> +
<b>BABON</b> ○	<b>WIDAN</b> ○	<b>BURUN</b> ○	<b>MUPP</b> ○	<b>MAGIG</b> ○	<b>BETED</b> ○	<b>WASAB</b> ○	<b>EFVEN</b> ○	<b>MELGUE</b> ○	<b>NABOK</b> ○
<b>DAMIK</b> ○	<b>OLEN</b> ○	<b>USAT</b> ○	<b>GARUN</b> ○	<b>QOVAX</b> ○	<b>ETVUG</b> ○	<b>ORAP</b> ○	<b>TOSAR</b> ○	<b>EERAN</b> +	<b>GOTED</b> +
<b>ERAK</b> ○	<b>ROVEP</b> ○	<b>USUG</b> ○	<b>PEROB</b> +	<b>JADES</b> +	<b>ENAK</b> ○	<b>KEPAR</b> ○	<b>UGAN</b> ○	<b>POBET</b> ○	<b>JENK</b> ○
<b>FADIS</b> ○	<b>KOKIK</b> +	<b>FUSIS</b> ○	<b>KAPIN</b> ○	<b>ISEP</b> ○	<b>FRAGE</b> ○	<b>LEKIC</b> ○	<b>TOSAR</b> ○	<b>OLGOD</b> ○	<b>BELD</b> +
<b>VIAIK</b> ○	<b>QUIN</b> ○	<b>HEPER</b> ○	<b>ANOB</b> ○	<b>SEKAL</b> ○	<b>YLOIT</b> ○	<b>QAFIL</b> ○	<b>HAKAB</b> ○	<b>APEL</b> +	<b>SERAG</b> +
<b>BUREP</b> +	<b>WAKAP</b> ○	<b>BOLER</b> ○	<b>MINEP</b> ○	<b>SILVER</b> ○	<b>BADIC</b> ○	<b>WUPIN</b> ○	<b>BABUL</b> ○	<b>HELEN</b> +	<b>MUSIT</b> ○
<b>DUNUP</b> ○	<b>ORPO</b> ○	<b>FUBOK</b> ○	<b>CEVER</b> ○	<b>GAKOR</b> ○	<b>SERAG</b> +	<b>OTAN</b> ○	<b>TUSILO</b> ○	<b>CESER</b> ○	<b>GERIK</b> ○
<b>ELAK</b> ○	<b>KERUP</b> ○	<b>ULER</b> ○	<b>PRAG</b> +	<b>JAKEL</b> ○	<b>EDER</b> ○	<b>BOLAL</b> ○	<b>URUP</b> ○	<b>PRULU</b> ○	<b>JUYAK</b> ○

The Galactic Map

### Orders in Block Caps please

Name: .....

Code No: ..... Telephone No: .....

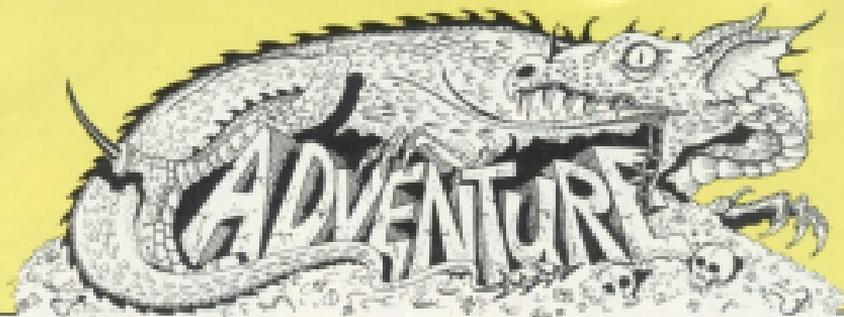
	1st Movement phase		2nd Movement phase	
	AT	ACTION	STAR	ACTION
FLEET 1				
FLEET 2				
FLEET 3				
FLEET 4				
FLEET 5				
FLEET 6				
FLEET 7				

I wish to move the ..... Empire's Imperial Ship from ..... to .....

Please notify us separately of any change of address.







## BEATING THE DEADLINES!

The difficult part about writing this Adventure page is that I have to operate to a deadline. That is not a problem until a game begging a review "starts" at an early stage, leaving much work to be done before my "copy" can be written.

So there I am, typing away on my notes. I'm tired, it is late — oh so — not another one of those difficult Adventures! Having just reviewed eight games for a recent supplement, I want to bed and forget it.

Of course, that was not the end of it — I know that sooner or later I would have to come back to it!

So when a bank-holiday weekend came along, I booted up the system, and designed myself for a long haul.

## STRANGER BEWARE . . .

The rest of the screen is black. I press a key, the disc starts to whirl in its drive, and I am suddenly on a desert highway near an abandoned gasoline station some way from a small desert town.

Thus starts *Xenos*, the latest offering on offer from Tandy.

After wandering around the gas station I decided that for now it would have to be considered a red-herring apart from the crawlerbar, and moseyed into town.

Although completing only six buildings, I found it surprisingly difficult to find my way around.

Losing my bearings, I scrooped up a side alley only to lose my way in the desert, nearly dying of thirst, and really dying of poison in some flash seconds caused by something very strange and nasty out there.

Retreat, and try again. This time I will not be beaten! Why is the gas station and town deserted? Is the jeep really a red-herring?

If so, then the Jack-o-Matic 550 is a very elaborate hoax. What does the old prospector out in the desert know about a "magical anomaly"?

Questions begin pouring through my mind, and I am awash, oblivious to calls for meals, missing the TV program I had meant to watch. . . .

BY KEITH CAMPBELL



That is the other trouble with writing this page. Occasionally I come across an Adventure so intriguing, that I am unable to stop, driven on by a craving for the solution — to beat with the deadline! And *Xenos* is one of those few! When I have finished writing this I intend to blow up that side if it takes me all night (What a minute — could the deadline be for another program?)

*Xenos* runs from disc only on TRS-80 Model 1/3 compatible machines. Requiring no elementary knowledge of the American language, if a command isn't recognized you will be very cleverly told what word might be missing.

For instance, if you type "UNLOCK DOOR" the line may be altered to read "UNLOCK DOOR WITH what?", the "what" flashing for a while, eventually clearing to let you add further words. An unknown verb will lead to the insertion of a flashing "VERB" at the start of your input.

The plot of *Xenos* is somewhat reminiscent of *Ghost Town*, in that everywhere is deserted, but similarity of setting and plot end there.

The score is announced in percentage of mission fulfilled. The first 50% is not too hard to achieve, but the going begins to get rough from there on.

Are there many red-herrings in the game, or will things all fall into place? Is screaming Post-Op responsible for the fact that I can get my hands in the

separator and apparently leave them there, or am I possibly a strange being?

*Xenos* is big, but does not appear limitless. Not a long term project like *Dork*, but one that you will get much about until finally you have unlocked the riddle of Percipity City!

## 'X' ADVENTURE ON TAPE . . .

Occasionally I describe a particular Adventure as different. That is not a suitable description for *Xenos* Adventure which requires a BBC Model B computer to run, and takes you into a world of underground caverns, inhabited by dwarfs and monsters.

These are dangerous creatures, and cannot be relied on to turn up in the same place in each game! Some of the situations are similar to those encountered in other games, but with a difference.

With some hard thinking the Adventure will progress gradually towards his goal, the depositing of all treasures in the treasure store.

When this point is reached (says the blurb — but I haven't reached that point) "something will happen".

On his travels the Adventure will find objects not often encountered in Adventure games, the usefulness or otherwise

## HOW TO DEFEAT MOST CUNNING

I received recently a letter from reader Alex Shipp, who has been hawking away writing an adventure for his TRS-80-1E.

Upon completing it he found one major problem: how to stop his little brother passing the *WRECK* try, then taking the whole program!

"As you can imagine," he wrote, "some of the messages rather give the game away!" Even worse, what was to stop him getting a listing before he even started to run the game?

He assured me that his brother would be quite willing to accept such unobtainable methods.

This is a problem that begets every Adventure writer. If, of course, Alex's brother is as little as he sounds, then



# MACHINE CODE

## DEALING WITH LOGICAL VALUES

So far in this series we have been looking at programming in terms of arithmetic and interpreting the result in the computer as having numerical values.

However, there are instructions that allow us to treat the 0s and 1s as having logical or Boolean values, with 0 meaning false and 1 meaning true. The simplest logical operations are:

**NOT:** Invert a single bit, so 0 (false) becomes 1 (true), and vice versa.

**AND:** Takes two bits and returns 1 (true) if both the bits are 1 (true) and returns 0 (false) otherwise.



**INCLUSIVE OR (usually just OR):** Takes two bits and returns 1 (true) if at least one of the bits is 1 (true) and returns 0 (false) if both the bits are 0 (false).

**EXCLUSIVE OR (usually abbreviated XOR or EOR):** Takes two bits and returns 1 (true) if exactly one of the bits is 1 (true) and returns 0 (false) otherwise.

**NOT** and **AND** reflect the use of these words in ordinary English. We have two types of **OR** because **OR** in ordinary English is ambiguous — sometimes meaning **INCLUSIVE OR** and sometimes meaning **EXCLUSIVE OR**.

## POSSIBILITY OF CONFUSION . . .

There are symbols here for three operations, **NOT** being indicated by writing a bar above a symbol, so **NOT P** would be written as  $\bar{P}$ , and two commonly used sets of symbols for **AND**, **OR**, **OR**, **AND** are  $\cdot$ ,  $\vee$  and  $+$ ,  $+$ , so we write  $P \cdot Q$  for **P AND Q**,  $P \vee Q$  for **P OR Q**,  $P \vee Q$  for **P OR Q**,  $P \cdot Q$  for **P AND Q**,  $P + Q$  for **P OR Q**,  $P + Q$  for **P AND Q**.

It is best to use the first set of symbols. With the second set there is a possibility of confusion with the arith-

metic symbols for multiplication and addition. The second set is more often used in electronics where this confusion is less likely.

Logical operations can be combined to build up expressions, for example  $(P \cdot Q)$  meaning **NOT** and **(P AND Q)** or  $(P \cdot Q) \cdot R$  meaning **(P AND Q) OR (R AND Q)**.

The branch of mathematical logic called **Boolean Algebra** deals with methods of evaluating and simplifying expressions like these.

The 6800, 6809 and 206 microprocessors all have instructions for **AND**, **INCLUSIVE OR** and **EXCLUSIVE OR**, which all work in a similar way.

The 6800 opcode instructions are **AND**, **ORA**, and **EOB**, and can be used with immediate, absolute, zero page, indirect X, indirect Y, zero page X, absolute X, and absolute Y addressing modes.

The 6809 opcode instructions are **ANDA**, **ANDS**, **ORA**, **ORAS**, **EOBAS**, **EOBS**, the A or B indicating the accumulator the instruction operates on.

Like most 6809 instructions, these opcodes can be used with all meaningful addressing modes.

The 206 opcode instructions are **AND**, **OR**, and **XOR**, and these can be used with 8-bit immediate data, a register — **REGISTER**, or **I**, or an indirect memory reference — **(R)**, **OR + displacement**, **(Y + displacement)**.

The machine code instructions work on bytes, performing the logical operation simultaneously on the eight pairs of corresponding bits in the accumulator and the operand, and leaving the result in the accumulator.

For example, if we have:

```
0000
LDA 00110011
AND 00010001
EOB
0000
LDA 00110011
ANDA 00010001
EOB
LD A,00110011
AND 00010001
```

In 6800 and 6809 assembly language a binary number is indicated by writing a  $\bar{h}$  sign in front of it, and in 206 assembly language by writing a  $\bar{b}$  after the number.

The result will be to leave 00010000 binary in the accumulator. Similarly, using **OR** instead of **AND** would leave 01100111 binary in the accumulator, and using **EXCLUSIVE OR** would leave 01100110 in the accumulator.

These logical instructions are frequently used when we want to work with some of the bits in a byte and

ignore others or leave them unchanged.

For example, suppose we are working with ASCII codes for letters of the alphabet and it does not matter whether we have upper case or lower case letters.

The ASCII codes for upper case letters are the binary numbers from 01000001 to 01011000 (65 to 90 decimal) and the codes for lower case letters are the binary numbers from 01100001 to 01111000 (97 to 122 decimal).

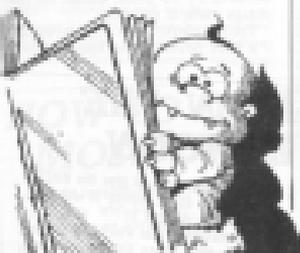
The difference between the code for an upper case letter and the code for the corresponding lower case letter is that the upper case letter has 0 in bit 5 while the lower case letter has 1 in bit 5.

We can use the logical instructions to affect bit 5 only and leave the other seven bits unchanged.

If we start with the ASCII code for a letter, **AND** with 10011111 will always leave an upper case letter, **OR** with 01100000 will always leave a lower case letter, and **XOR** with 01100000 will change an upper case letter to a lower case letter and vice versa.

## LOOKING BEHIND THE MASK . . .

A bit pattern used with a logical instruction in this way is called a **mask**. We can work out the type of instruction and the mask we need in any particular case with the following relations, where 0 represents any bit value (0 or 1):



```
0 1 = 0
0 0 = 0
1 1 = 1
1 0 = 1
0 1 = 1
1 0 = 0
```

In general, we say AND with a mask to set some bits to 1 while leaving others unchanged, OR with a mask to set some bits to 1 while leaving others unchanged, and XOR with a mask to complement some bits while leaving others unchanged.

## AN ADDITIONAL INSTRUCTION

The 8000 has one other instruction related to these logical instructions — BIT, which can be used with zero-page and absolute addressing modes.

BIT effects the flags, bits 7 and 6 of the memory location specified in the operand going into the sign and overflow flags respectively, and the zero flag being set according to the result of an AND operation between the accumulator and the memory location (this AND does not affect the accumulator, only the zero flag).

Related instructions on the 260 are CPL, and the BIT, SET, RES groups.

CPL complements the contents of the accumulator, changing its to 1 and 1s to 0s.

BIT, SET and RES are used in the form: BIT b, register; BIT b, (IM); BIT b, (X+Y); BIT b, (Y+Z); and similarly for SET and RES, where b is the bit number, from 0 to 7 that the instruction works on.

BIT sets the complement of the specified bit into the Z flag, setting the Z flag to 1 will reflect the value of the bit.

SET sets the specified bit to 1, and RES resets the specified bit to 0.



If you have any problems relating to Ted Ball's Machine Code articles, questions about machine code programming or assembly language, then please don't hesitate to drop us a line and we'll pass on your questions to our expert.

Remember, the address to write to is Machine Code, or Computer and Video Games, Durrant House, 8 Herbet Hill, London EC1R 5UB.

In the meantime if there is any aspect of machine code programming you feel needs more attention, why not tell us.

In the 8000, related instructions are CIMA, COMB, COM, ANDCC, ORCC, CWF#1.

CIMA and COMB complement the A and B accumulators respectively. COM can be used with direct, extended and indirect/addressed addressing modes, and complements the contents of the memory location specified by the operand.

ANDCC, ORCC and CWF#1 can be used with immediate addressing only. ANDCC ANDs the operand with the Condition Code register, leaving the result in the Condition Code register. ORCC ORs the operand with the CC register leaving the result in CC. CWF#1 ANDs the operand with the CC register, leaving the result in CC, and stops and waits for an interrupt.

## FLAGS WITH CLEAR VALUES

ANDCC and ORCC are used to put specific values into the flags.

For example, the Carry flag is bit 0 of the Condition Code register.

To set the carry to 1 we use the instruction ORCC #%00000001, and to clear the carry to 0 we use the instruction ANDCC #%11111110.

The 8000 assembly language contains the instructions CLC (Clear Carry), IEC (Set Carry), CLM (Clear Interrupt Mask), IEM (Set Interrupt Mask), CLF (Clear Overflow), SEV (Set Overflow).

These are included to make 8000 source code compatible with 8000 source code.

The instructions are emulated into the machine code for the corresponding ANDCC or ORCC instructions.

**TRUTH TABLES**

OR		NOT	
P	Q	P	Q
0	0	1	1
0	1	1	0
1	0	0	1
1	1	0	0

XOR		AND	
P	Q	P	Q
0	0	0	0
0	1	0	1
1	0	1	0
1	1	1	1



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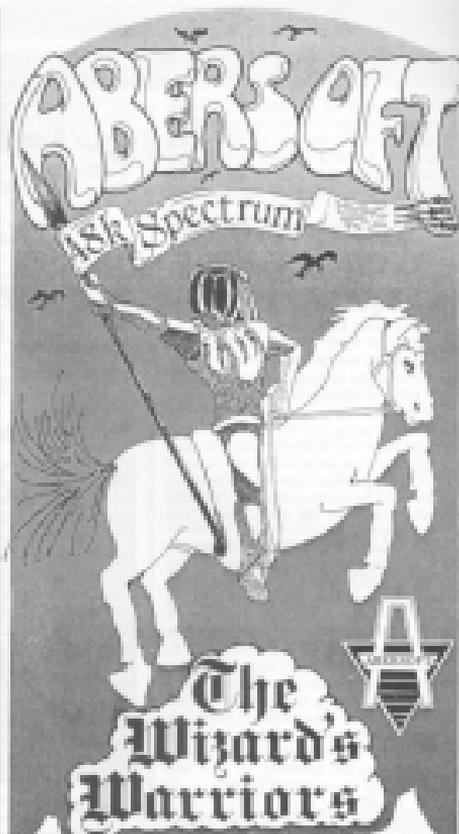
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# GRAPHICS

By Garry Marshall

The Texas Instruments TI-80/81 has some highly individual features for graphics.

The graphics commands that are provided by TI Basic, which is the version of Basic that is built into the computer, include CHAR, HCHAR, VCHAR and GCHAR.

These commands have the following purposes. CHAR permits a graphics character to be defined so that you can establish, say, your own kind of space invader. With HCHAR and VCHAR characters can be placed on the screen, and GCHAR allows you to examine the screen.

Although commands and facilities comparable to these are available on other machines, very few provide them in such a consistent and easily used form. In particular, the commands for

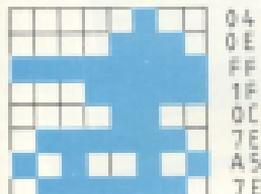


Fig. 1.

placing characters on the screen and for examining the screen work in terms of the screen's row and column positions. Thus, they provide the same capability as POKE and PEKE do on other machines.

Now, suppose that we want to create a graphics character such as the one shown in Figure 1 to use in a game. This character can be defined and assigned the code 128 by the command: CALL CHAR(128, "040E1F0C7EA5TE")

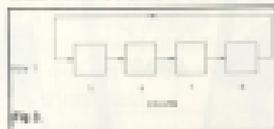
Note that the characters are based on an 8x8 dot matrix, and that the string used to define the character is just the row-by-row hexadecimal representation of the character when each dot that is "on" is represented by a 1 and each one that is "off" is represented by a 0.

There is not too much scope for representing a tank (in case you didn't recognize it) in this way, and if you want to create a more realistic effect you can always use four characters to be plotted next to each other as shown in Figure 2. The four characters used here can be defined as characters by

```
CALL CHAR(128, "00100FF0000"),
CALL CHAR(129, "000FF000000"),
CALL CHAR(130, "0000FF00000"),
CALL CHAR(131, "00000FF0000")
```

Note that any trailing zeroes need not be included in the string describing a character.

The small tank can be plotted at column 8 of row 7, for example, by: CALL HCHAR(128,128)



The larger tank can be plotted with its top left part at column 8 of row 7 by: CALL HCHAR(128,128) CALL HCHAR(129,128) CALL HCHAR(130,128) CALL HCHAR(131,128)

With the computer's commands it is particularly easy to create movement. For instance, to make the small tank cycle through the positions shown in figure 3 the following program segment will suffice. It works by blanking out the tank (with a space character code 32) just before it is plotted in the next position.

```
100 DIM NEXT(5)
110 NEXT(0)=4
120 NEXT(1)=7
130 NEXT(2)=0
140 NEXT(3)=7
```

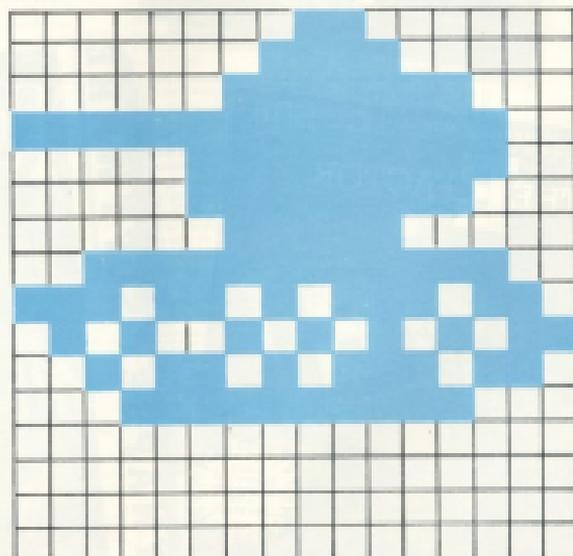


Fig. 3.

```
140 NEXT(4)=5
150 ROW=7
160 COLUMN=5
170 CALL HCHAR(ROW, COLUMN,
128)
180 CALL HCHAR(ROW, COLUMN, 32)
190 COLUMN=NEXT(COLUMN)
200 GOTO 170
```

The movement can be slowed down by introducing a delay into the loop, say, between lines 170 and 180.

If the path to be followed by the tank already contains plotted characters that should be replaced as the tank passes, then lines 170 to 180 can be replaced with the following lines. The variable TEMP holds the code of the character to be replaced after the tank has passed.

```
170 CALL HCHAR(ROW, COLUMN, TEMP)
180 CALL HCHAR(ROW, COLUMN,
128)
190 CALL HCHAR(ROW, COLUMN, TEMP)
200 COLUMN=NEXT(COLUMN)
210 GOTO 170
```

Facts other than a straight line can be created by allowing the row position to change as well as the column position.

With SCREEN the colors of the screen can be established, while with COLOR the colors of the characters can be established independently.



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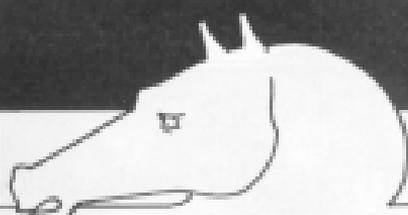
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# CHESS



The fourth World Computer Chess championship is due to be held at the annual meeting of the ACM (Association for Computing Machinery) in New York from October 22nd-25th this year.

It is difficult at this stage to see the reigning world champion, BELLE, failing to retain the championship it won three years ago at the last championship, at Linz in Austria.

## WARNING FOR BELLE

A good indicator for the world championship is the annual series of North American computer chess championships also sponsored by the ACM.

The "Chess" series of programs by David Slate and Larry Alben dominated the early years of this tournament with 7 wins in the first 8 years (1970-1977). From 1978 onwards, however, BELLE has been the dominant program, with wins in 1979, 1980, 1981 and 1982, and second place in 1978 (behind Chess 4.5).

The only program apart from BELLE and the various versions of "Chess" ever to win the North American championship was Blitb, back in 1974. The "Chess" series no longer appears to take part in tournament play, leaving BELLE in an apparently supreme position.

Nevertheless, the master of its victory in the 1982 championship in Dallas reveals a slight warning note for BELLE.

## DRAW DANGER

In the four-round tournament, the program won two games and drew two to finish in a four-way tie for first place with 3 out of 4.

BELLE gained first place on tie-breaking, a deserved result since it had played each of the three others concerned, drawing with Guy Him and beating Nechess and Chess.

The greatest danger to the strongest program in a short tournament is too many drawn games. In a four-round event, it may be impossible to recover from even one draw — such a small number of rounds would not be seriously considered for a human event at any remotely comparable level.

BELLE's victory over Nechess in

BELLE's opening book of 350,000 positions and ability to evaluate up to 150,000 positions per second are both huge advantages over all its foreseeable rivals. On the other hand, Kaisa the winner in 1974 and Chess 4.5, winner in 1977, also seemed favourites to retain the championship three years later, but failed to do so. Will the title change hands again?

sound it at Dallas was a remarkable one.

It is interesting to note that Nechess provides a link with the past glories of the "Chess" series, since one of its co-designers is David Slate, co-designer of the original version of "Chess", over a decade before.

Here is the game between BELLE and Nechess.

## STRANGE PLAY

White: BELLE v Black: Nechess  
1. P-B4, P-B4 2. P-O3, N-B3; 3. P-O4, N-P4 4. P-B4 5. Q-M4, N-BP; 6. Q-P4

Extremely strange play and a most unusual position after 6 moves — already the game seems to be won for white!

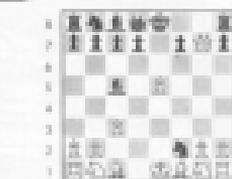
## GOODBYE TO ALL THIS . . .

This is my final article in a series which began 21 months ago, in the first issue of Computer and Video Games, when I described Van Kempen's Turk, an automatic chess player built over 200 years ago.

In the series, I have tried to combine articles about tournament play with ones on detailed analysis of end games such as King and Rook against King and Knight or on topics such as retrograde analysis or finding forced checkmates.

Computer chess is unusual in attracting two different kinds of followers, the tournament competitor and the academic researcher.

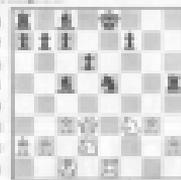
It is notable that even BELLE incorporates very few ideas which were not in use 15



If now 6. ... N-B3, 7. Q-P4, R-B3; 8. R-P4b wins on black continues 6. ... R-B3; 7. R-B3, Q-B; 8. Q-P4, N-B3.

Now Black must try to extricate its knight.

8. N-B3, P-B3; 10. B-O3, P-B3; 11. Q-P4, R-B3; 12. P-B3, N-B3; 13. Q-B3, N-B3; 14. Q-M4, R-B3; 15. Q-P4, R-B4; 16. Q-O4, N-P; 17. R-B1, P-O3; and Black resigned.



After 16. N-B3, P-B3 or 17. ... N-B3; 16. N-B3, P-B3 White wins another piece by Q-P4b.

or more years ago. Its success is very largely due to its large speed advantage over its rivals. The Artificial Intelligence researcher would argue that its lack of any deep understanding of the positional themes of the game will prevent it ever advancing much beyond its current level.

Others would claim that a further increase in speed of analysis is all that is required to improve performance and that this will apply indefinitely, as long as hardware speeds increase.

Thus, a World Champion program is attainable as soon as fast enough hardware becomes available without any additional "intelligence". Which side is right? Only time will tell.

BY MAX BRAMER

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One of the first discoveries that everyone makes is a zig-zag capturing sequence resembling a staircase, but nonetheless referred to in this part of the world as a ladder. The Japanese use the word *shicho*, (with the accent on the second syllable). Thus the saying "No know *shicho*, so play Go!"

Figure 1 shows why understanding ladders is so vital. White plays the cut at 1, separating the black stones marked. Unfortunately for white, this is a mistake! Black has two ways of putting the cutting white stone into *atari* (under immediate threat of capture).

If black plays at white 2, white would naturally play at black 3 obtaining three liberties for his group and thus escaping immediate danger.

So black plays as shown and white extends but now his group has only two liberties. Black can then put white into *atari* again.

By choosing the correct sequence to create the zig-zag course, black drives white clear across the board. At the edge white finally runs out of liberties and thus inevitably loses his now quite large group.

Of course as soon as white discovers that he is in a ladder, he should cut his losses. Having carried on to the bitter end, the only sensible move left for white is resignation.

However, the game situation is rarely this simple. Not all ladders succeed. Figure 2 shows a similar situation but with the presence of a "ladder breaker".

The stone marked was in place before the ladder sequence. Thus after white 11, white's group has three liberties and black has no good move. Indeed the situation is now disastrous for black! He has numerous cutting points (marked with crosses) and can expect many

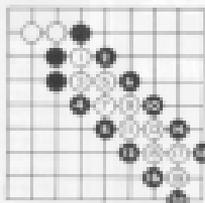


Figure 1: A successful ladder.

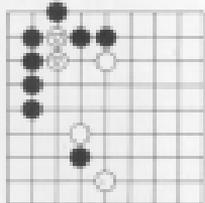


Figure 2: Cut white into *atari*!

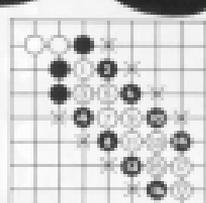


Figure 3: A ladder breaker.

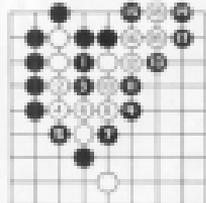


Figure 4: Ladders can lose.

of his stones to be captured and his entire position to crumble.

Black should have checked for white stones anywhere along the path of the ladder including where the black stones are played.

A common tactic is to play a stone that not only threatens to rescue one or more stones in a ladder, but also threatens some other dire consequence at the same time.

The idea is that the opponent can only answer one of the threats. For example, where the paths of two ladders intersect it is possible to play one stone breaking two ladders, thus ensuring the rescue of at least some stones.

In advanced play, on a full-sized board (19x19 grid), whole sequences of moves will be selected in anticipation of the effects of ladders.

It is very difficult to imagine that any computer program could play Go even moderately well without taking ladders into account. Indeed, the simple Go playing program described in previous articles can be severely thrashed by a human opponent of ladder tactics. Happily, however, it is relatively easy to extend such a program.

The most important amendment is to ensure that the correct *atari* is chosen. The program must try both

ways of putting a group into *atari* and choose the way which, if the *atari*ed group extends, minimizes its number of liberties.

If this gives rise to exactly two liberties the program must look further ahead, assuming the sequence of moves until the group "escapes" or dies.

If the group eventually escapes and if the original stone making the *atari* has only two liberties itself, the *atari* must be rejected otherwise the program can go ahead. Where both options produce two liberties the lookahead must branch. If one branch ends in death for the ladder across the *atari* is OK.

The method is fairly quick because only when an *atari* is selected for further consideration does the lookahead occur. Also the lookahead will examine very few moves, since the sequence in a ladder is usually forced.

The method has good results in complicated situations where the human player tends to "boogie".

For instance, look at Figure 3. Can black capture the marked stones? The computer program says yes — the sequence is shown in Figure 4 where we discover that ladders can bleed!

BY ALLAN SCARFF

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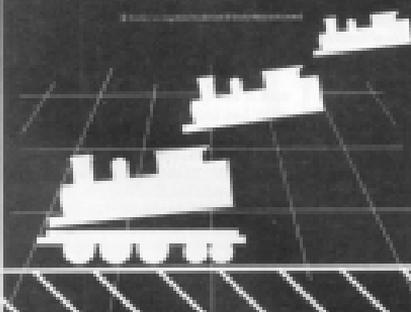
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It's the K size of the microchips, in the cartridges that determine how challenging and



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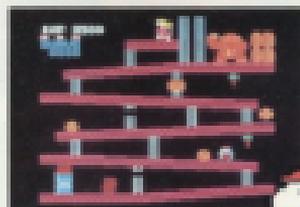
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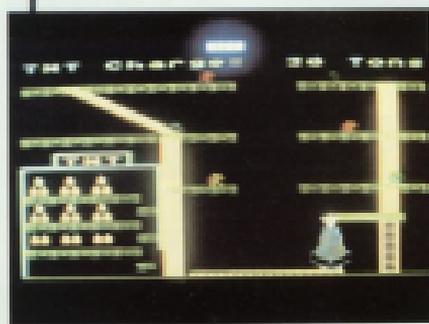
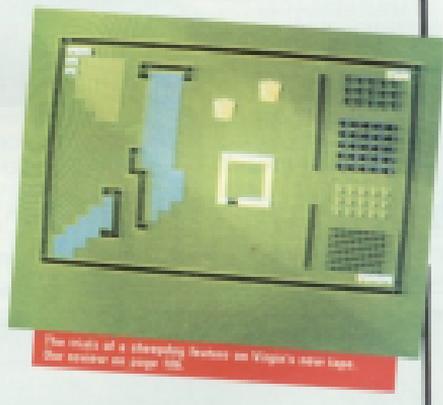
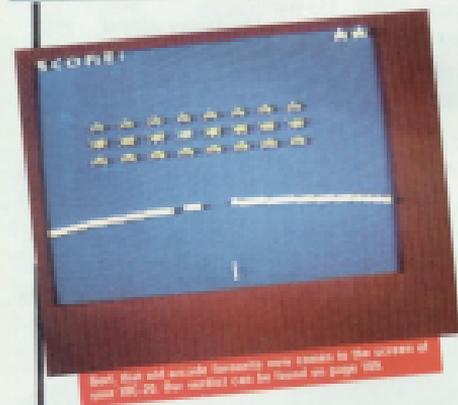
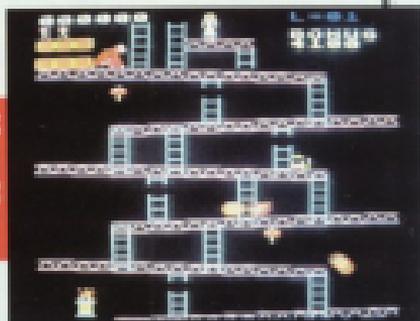


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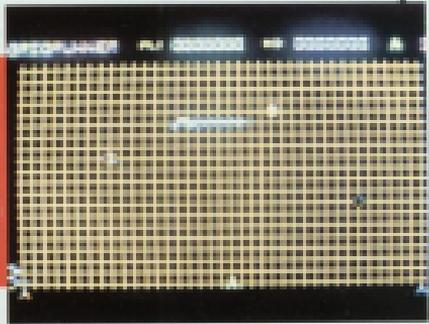
Peter's new Snakeable program (left) can beat human opponents. (Page 101)

Microsoft's review of Donkey Kong (right) for the BBC micro is a real killer! (Page 102)



Below the wire with Beauty. Both Coloma's challenge to the wire can be found on page 101.

Coloma takes up a challenge from the wire. See and explore it on a challenging new game. (Page 101)





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### SHEEPWALK

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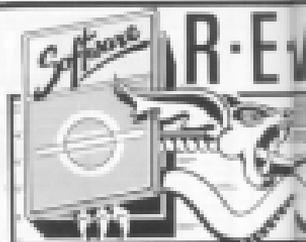
If this is the standard of their games then I would respectfully suggest that Mr Griston stick to records. At £7.95 a box has to be the rip-off of the year and a dead cert for our Great Software Dealers page.

The idea of the game is to round up all the sheep which have strayed from their pen. You play the part of the sheep-dog — although you could be forgiven for not realising this as the board is nothing more than a grey block with an arrow on the screen. The animal must also have a gammy leg as it moves with the speed of a limping ox rather than a scampering dog!

Points are awarded according to the speed at which the sheep have been rounded up and the amount of crops saved from the rampaging flock in the vegetable patch.

The idea for the game is a good one though not entirely original. It falls down on its execution. Written in Basic it's just far too slow. I can't think of any other professional software house who would bring out a game of this type and at this price without first improving its graphics and then speeding it up with machine code.

Perhaps this is the point. Do Virgin



see themselves as a software house at all, or is this just another example of the gold-rush mentality which is killing the computer games business with over-quality products.

The idea behind this approach to the business seems to be grab any program you can, and publish as quickly as possible to make a quick killing. Never mind the quality, just look at the full colour cassette inlay.

You have probably gathered by now that I'm not going to rush out and hand over almost £8 for Sheepwalk. Despite this there is something good about the game which I think a worthy of mention.

The author of the game is fully credited on the cassette inlay. We are given a picture of Gregory Trickett as well as a short biography. Software, like records and books, has to be thought of, programmed, and put forward for publishing by the author. The programmer therefore deserves our recognition for their efforts.

● Getting started	7
● Graphics	3
● Playability	3
● Value	6

## JOYSTICKS SPOIL THE FUN TOMBSTONE CITY

Tombstone City is one of those games from the official list of cartridges manufactured by Texas Instruments which are given an amount of shelf space disproportionate to the quality of the game.

In fairness to Texas it is an old game and some of the newer ones are of a much higher standard.

It's the buyers in the multiple electrical shops who really deserve the criticism for inducing people to buy these crummy old games. It is time they gave more thought to their software buying — particularly for the TI where there isn't a great deal to choose from.

The idea of the game is to blast all the Mergs that are drilled around the screen. Each time you hit one it turns into a giant desert cactus.

Using the buildings at the centre of the screen for shelter the best strategy is to dart in and out before the Mergs can get you. But don't block your escape routes from the townships by

blasting the Mergs as they move across the roads out of town. You could end up trapped!

As with many TI games the useless joysticks are one of the main factors which spoil the fun.

It's a game which requires quick hand-eye co-ordination and therefore extremely frustrating when your gun will not move as instructed.

When you have cleared one street a new day in Tombstone City begins.

If you do venture beyond the walls of the town to take on the Mergs in the desert you may need to use the panic button-space bar which repositions you at random somewhere else on the screen.

Not the best cartridge available for the TI and for my money Parasit and Ghospe Trail are much better games. Tombstone City is in the shape of around £25.

● Getting started	6
● Graphics	4
● Value	3
● Playability	4







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## N.E.X.T · M.O.N.T.H

## VIOLENT SPACE

Next month the Quest is on to find the living room champions who are taking computer games to the limits.

We are starting a Hall of Fame high score chart on a range of selected games which we will add to each month.

First up will be Violent Universe from Quest of Colchester. The game puts you in a spaceship in charge of a cluster of deadly solar gas-clouds.

An alien craft fleet through space the player sends out gas clouds which destroy any alien vehicles enough to enter into them.

The game can be played on a keyboard or a joystick. You have 40 seconds to conquer each level and must score more than 1,000 points to move on to the next level.

Quest have developed a system for checking high scores against a code and instantly validating them. This system has already worked well on Quest's previous game, Black Hole and the current top scorer is Maxwell Capel with 2850.

Scores on Violent Universe should be sent into Quest on the address shown on the cassette label and we will start publishing our Hall of Fame next month. If there are other cassettes you think we should include in a Hall of Fame please let us know by dropping us a line.

Violent Universe costs £5.95.

## DIZZY SPILLS

Two cassettes locked in spell-binding battle in an enchanted forest provide the action in a thrilling game known as 'Wrath', next month.

As your opponent sends a deadly wizard spell down upon you, you throw a heavy Shield Spell and reply by conjuring up a Demon to dispatch off through the forest to try and defeat the other wizard.

It's a game of atmosphere and cunning strategy as you try to outwit one-another and it features on the front cover of our September issue.

There's Star Trek in 3D, Vic Quest, Turtle Hop, a fascinating new computer game called Turtle Hop which bears no resemblance to Frogger; Chameleon and Assault, plus a whole lot more in a thrilling summer edition.

We also have a new disc on just how Paim managed to teach their Spectrum 11,800 words and the fascinating history of Scrabble-playing computers. This is backed up by a chance for best Scrabbleists to win a

£100 Spectrum plus Paim's Scrabble cassette, in a wordy competition.

It's all in the September issue of CMCV. But looking further into the future, we have a real treat for CMCV fans coming up before Christmas.

The Computer & Video Games 1984 Yearbook has 130 pages, including three cartoons, specially commissioned game listings, professional hints to help beginners perfect their games and much much more. We'll be up for you further sections of our 1984 Yearbook next month.

There's just no room left for Arcade Areas next month — but it will be back in October with four arcade-style games for your favourite machine!

## JUMPING JACK

Imagine's Jumping Jack is the latest addition to the company's range of Spectrum games and should soon be topping up our best-sellers chart.

And the Liverpool software house has given us 100 Jumping Jack cassettes to give away this month.

The first 100 cassettes we receive from readers will earn a copy of Jumping Jack for their 16 or 602 Spectrum.

Just fill in the coupon below and send it to us care of: Jumping Jack, Computer & Video Games, Dartmoor House, Herby Hill, London DC1R 9B.

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Next month we have 300 tapes to give away. There is 100 of each of Imagine's (currently secret) new launches. Two games are aimed at Spectrum owners, and the third is for Commodore 64 owners. We are having this competition around Manchester and the first 300 letters or postcards we receive next month with a Manchester postmark will receive a cassette.

So if you live in or around Manchester, make sure you're at our newspapers bright and early around the 10th of the month and we'll return the cassette of your choice to you if you're among the first 300 to write us.

## M.O.N.T.H · N.E.X.T

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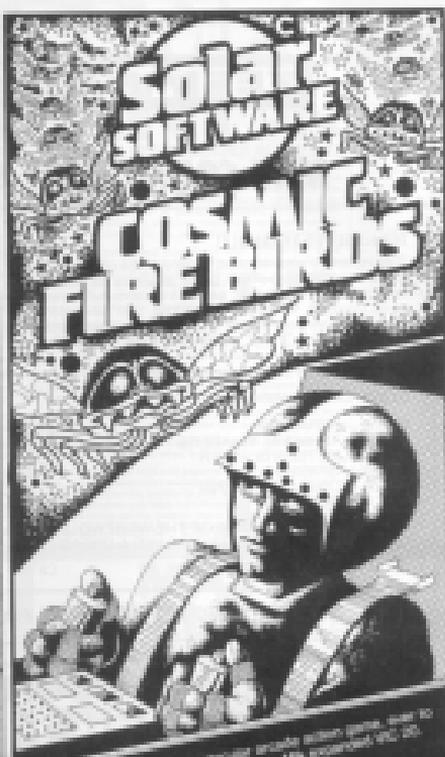
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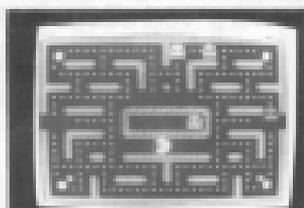


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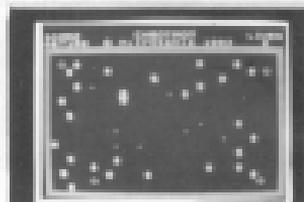
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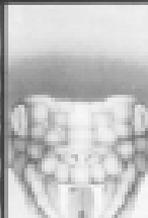
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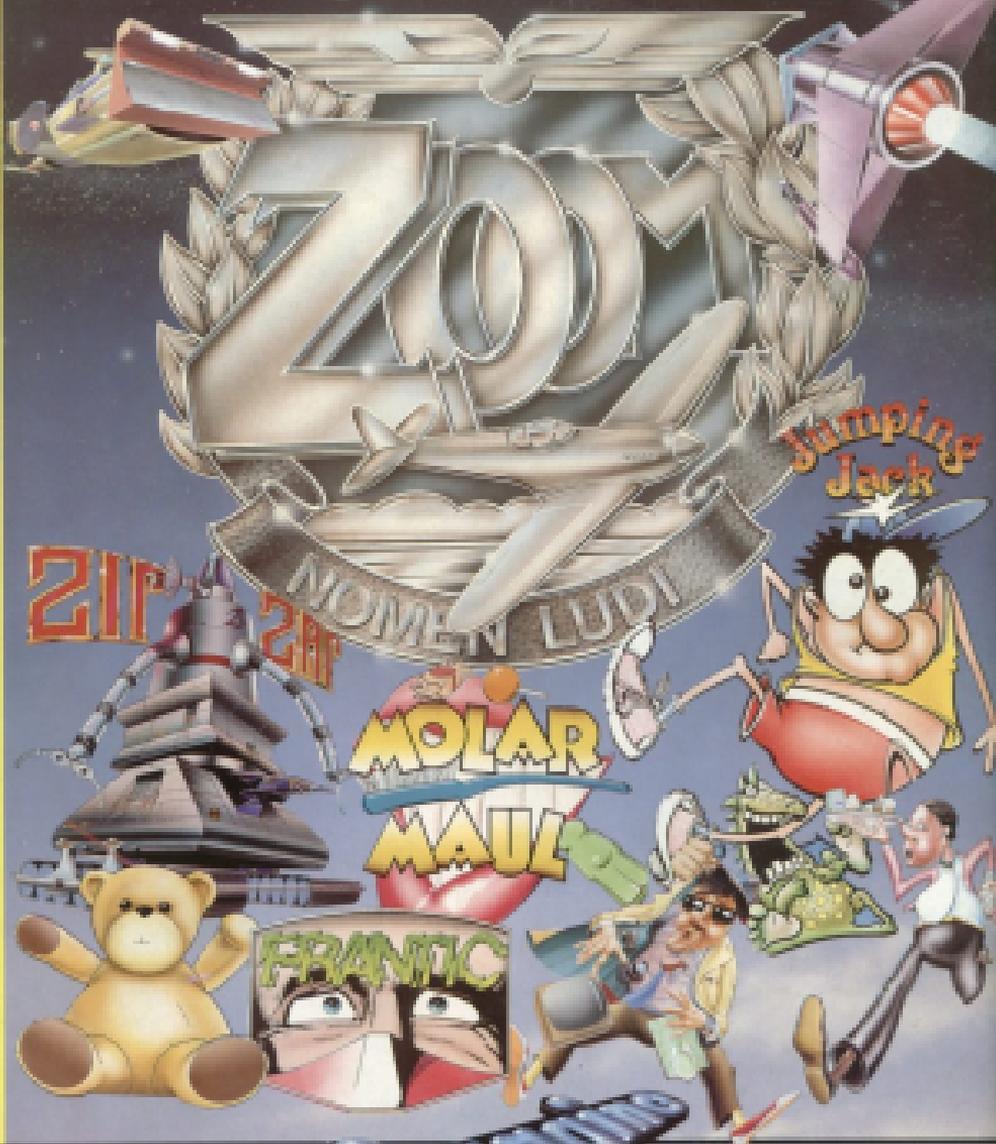








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